



**PROFILE OF A CREATIVE MIND**

## **Goldsmith**

*Paul Storr (1771-1844) achieved great distinction during the reign of George III for his gold and silverware. He has been called "The Last of the Great Goldsmiths".*

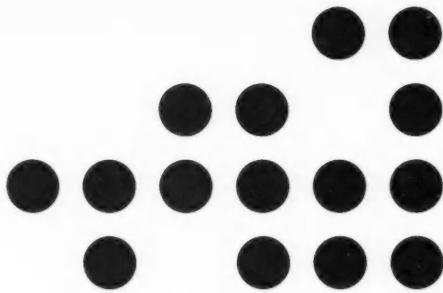


The Classical Style, revived by the Adam brothers, not only swept away the last traces of Rococo in architecture and furniture but affected other arts and crafts, including that of the goldsmith. In applying the Classical Style to the shaping and decoration of gold and silverware, Paul Storr exhibited a degree of craftsmanship previously equalled in England only by the Huguenot, Paul de Lamerie.

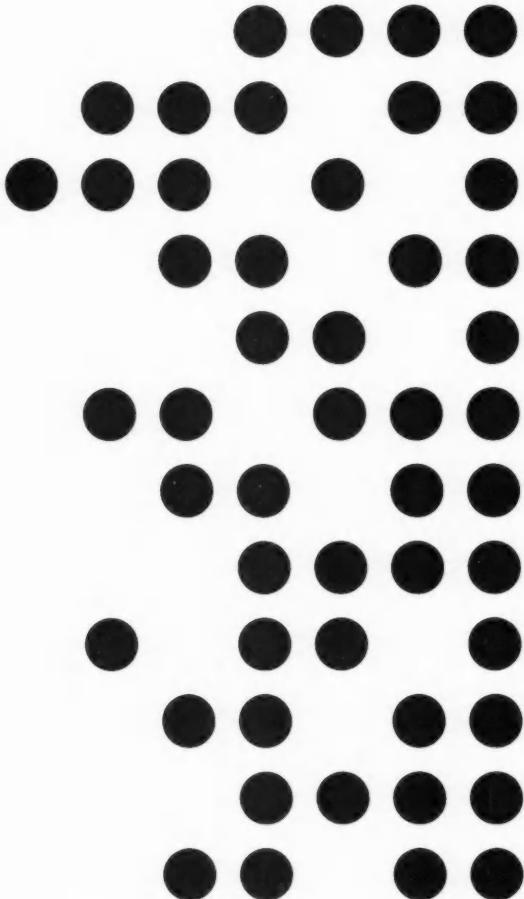
His monumental pieces were not uniformly successful, because he often had to translate the designs of artists more accustomed to other media. Many pieces of this type today languish in strongrooms. On the other hand, he had an unerring talent for designing and making simple plate and, after the passage of two centuries, scores of his teapots and coffeepots are still in daily use.

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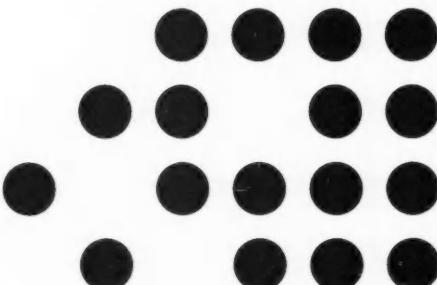


## Eighty-two successive operations



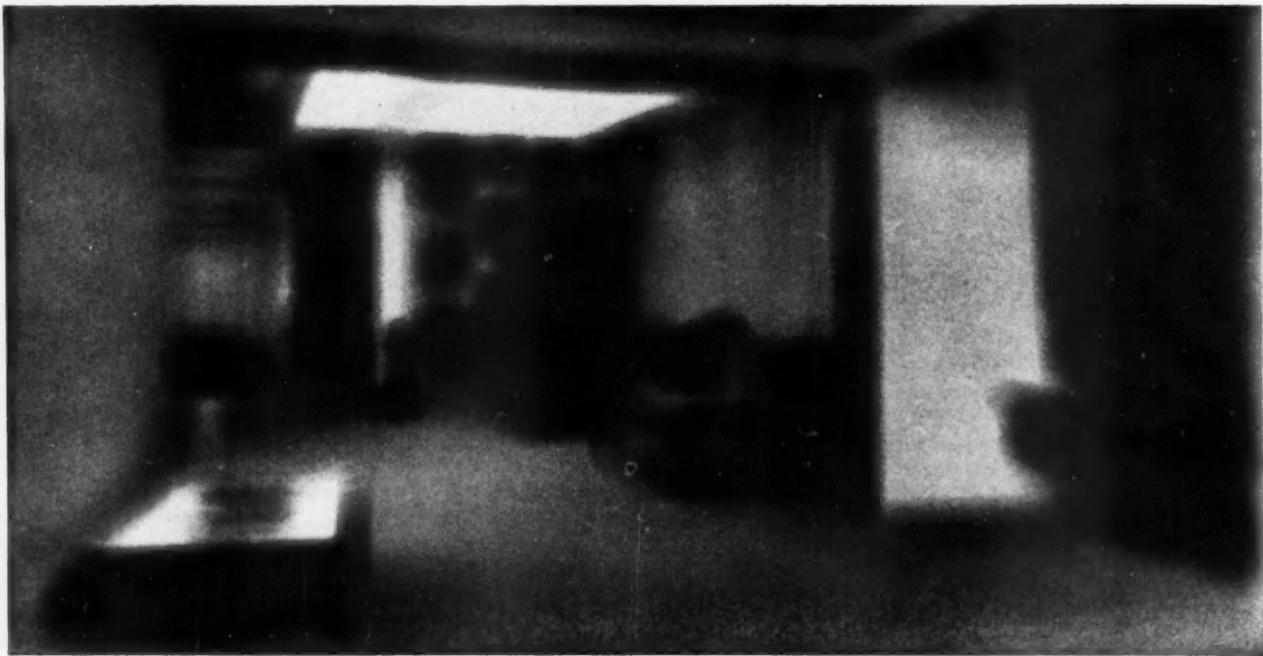
are required to perfect the manufacture of each of the composition matrices from which the type used in this text matter was cast. The basic principle of producing type – of first cutting relief letters in steel, then striking them into a series of aligning matrices (intaglio dies), and finally casting type from the finished matrix – remains much the same as it was five hundred years ago, though the tools and methods now used are vastly different. To produce a series of similar objects which are indistinguishably alike in the minutest detail calls for the most advanced engineering technique and microscopic inspection routine. The hand cutter could never be entirely sure of making an exact replica of an existing punch, but the type composing machinery manufacturer cannot permit the slightest deviation. There is nothing accidental about the manufacture of a 'Monotype' matrix; all matrices of a certain letter in a certain face must be identical in every respect. From the punch-cutting stage, where machines work to a tolerance of less than the thickness of a cigarette paper, to the finishing of the matrix sides, which must mate with over a thousand similar surfaces in a matrix-case, the greatest precision is required.

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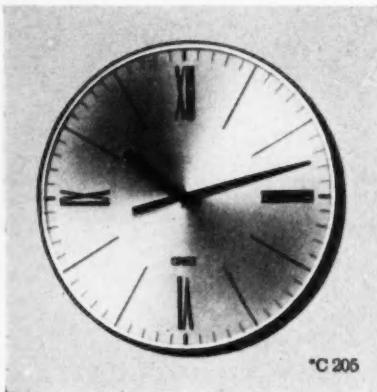
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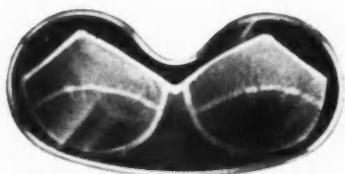
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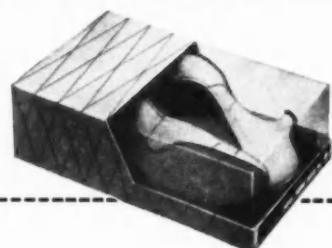


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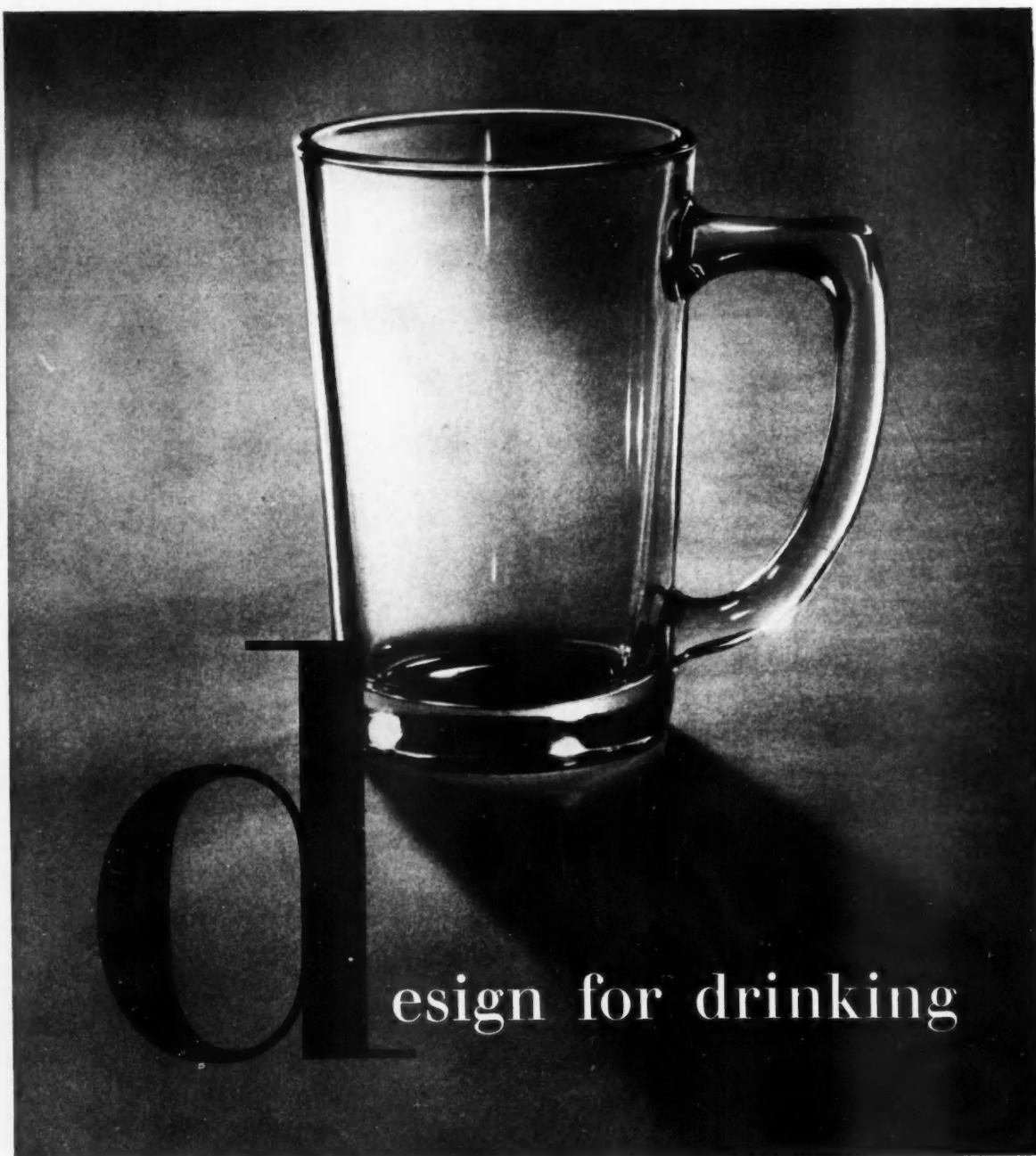
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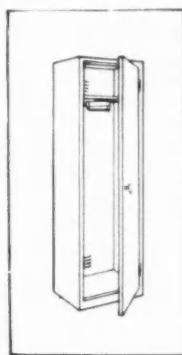


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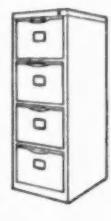
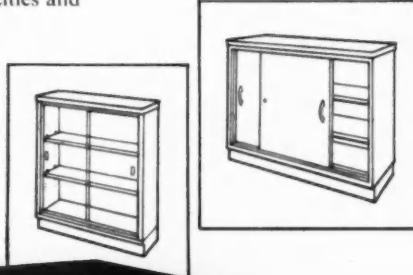
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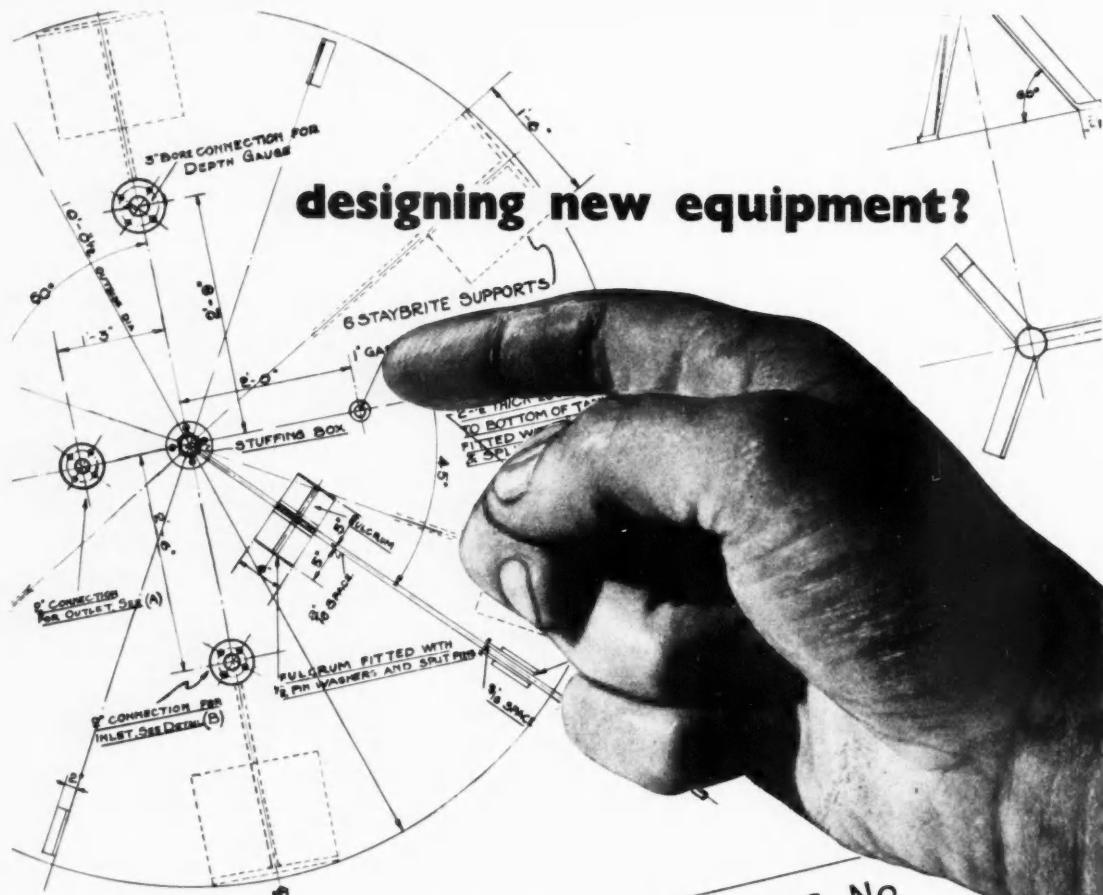
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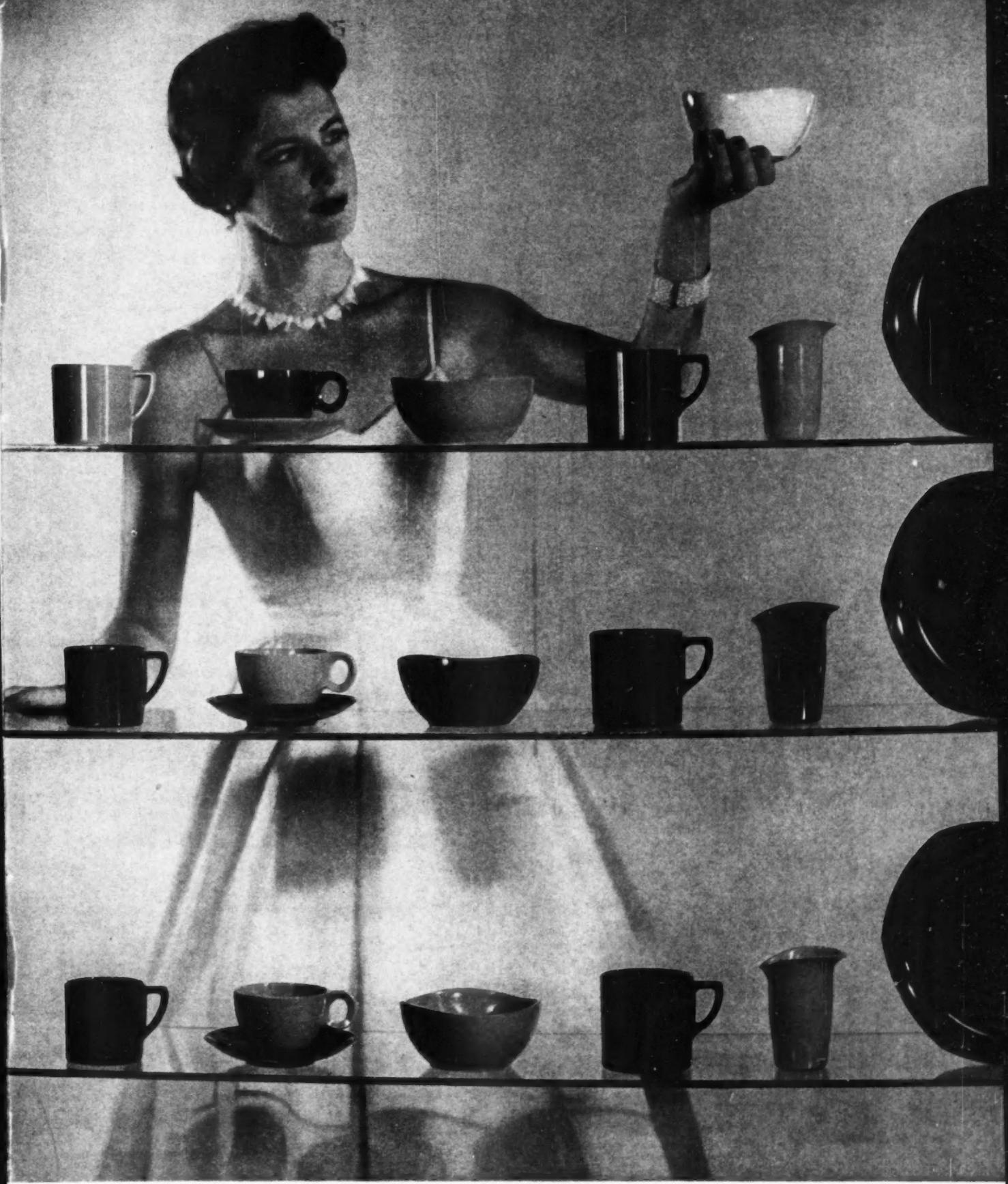
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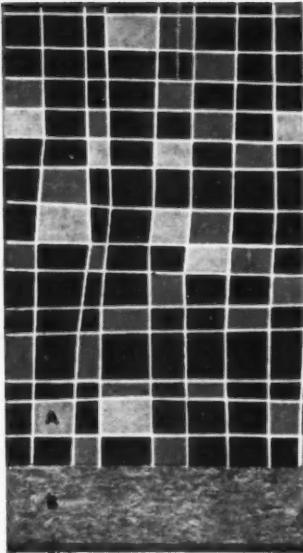
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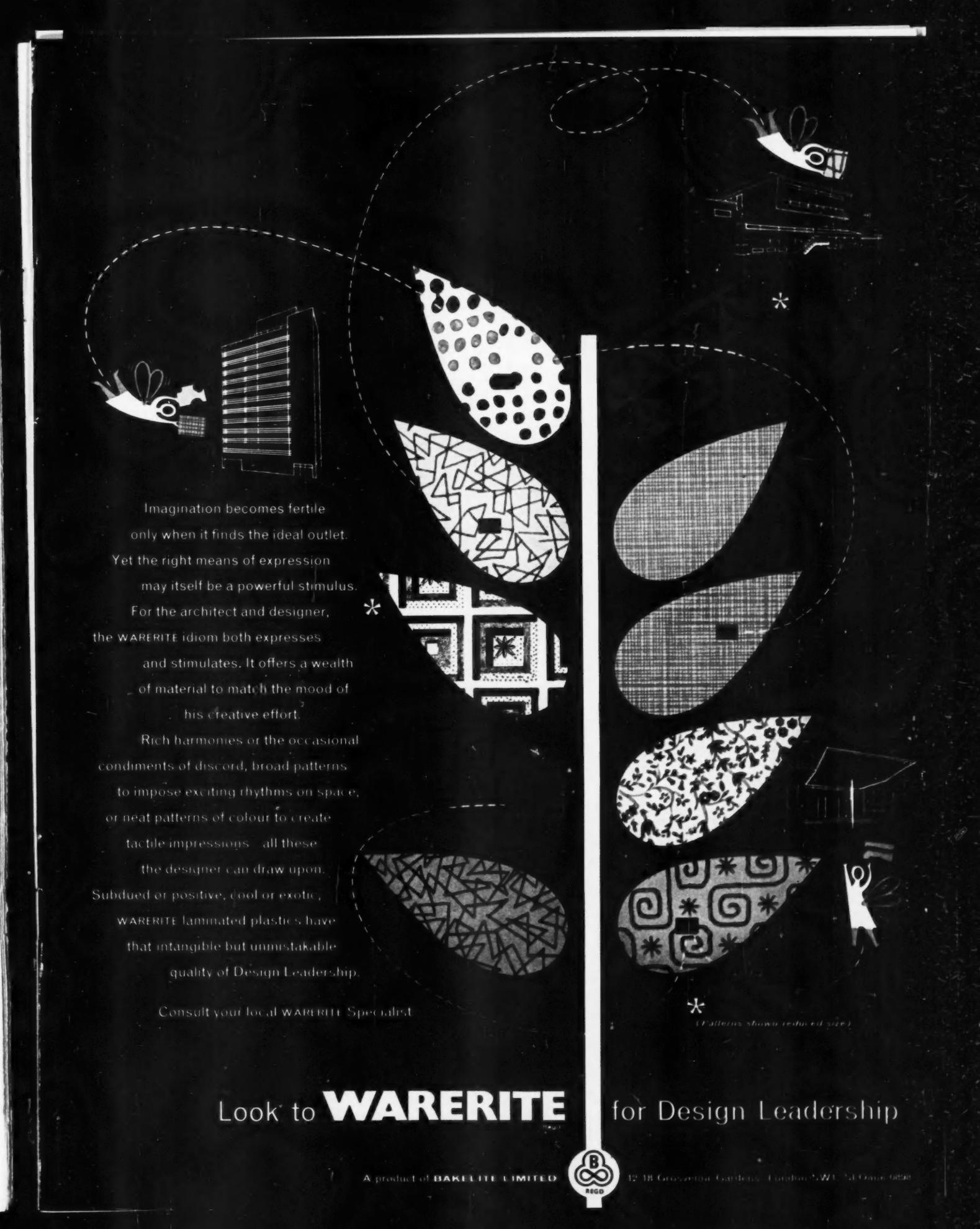


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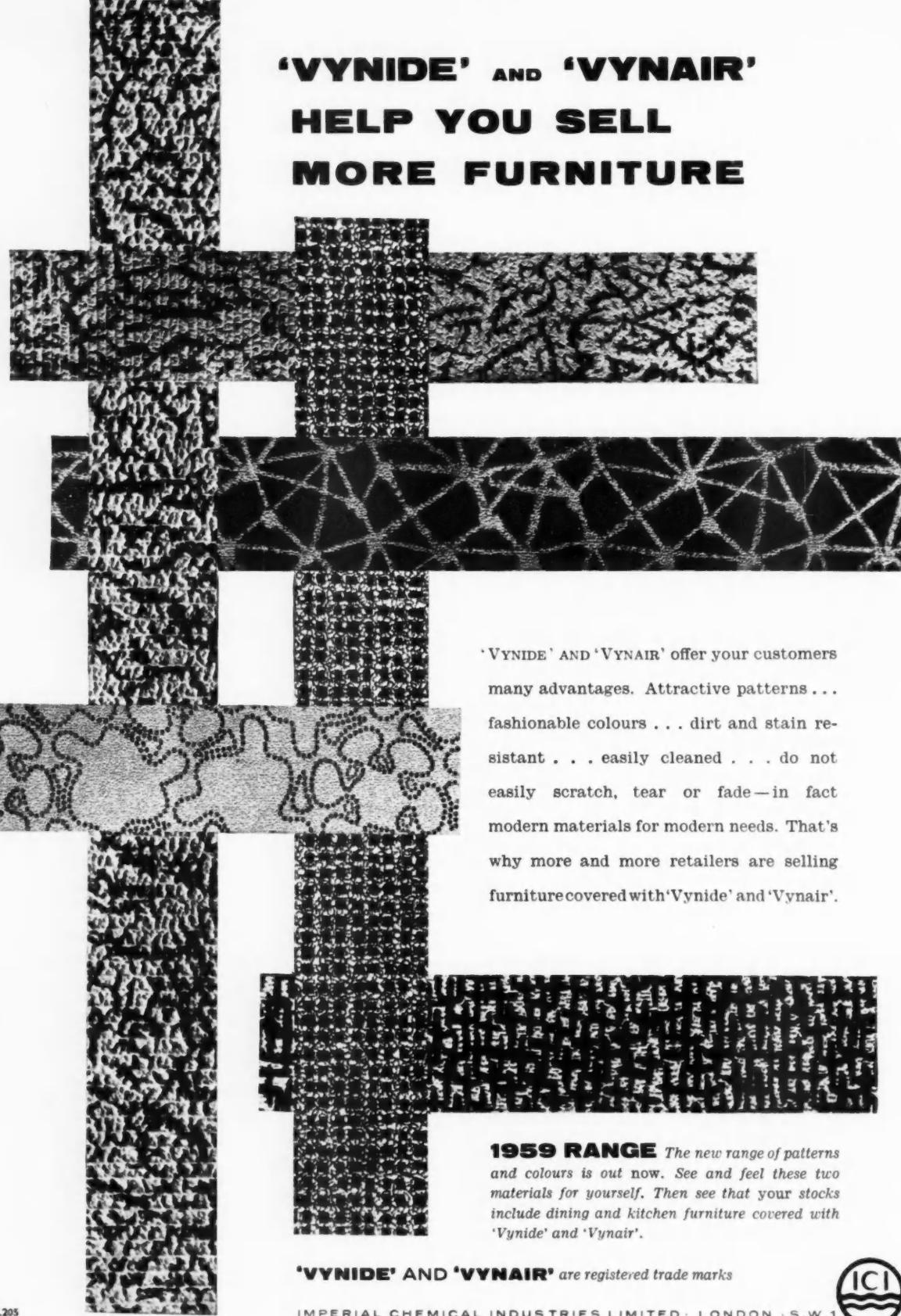
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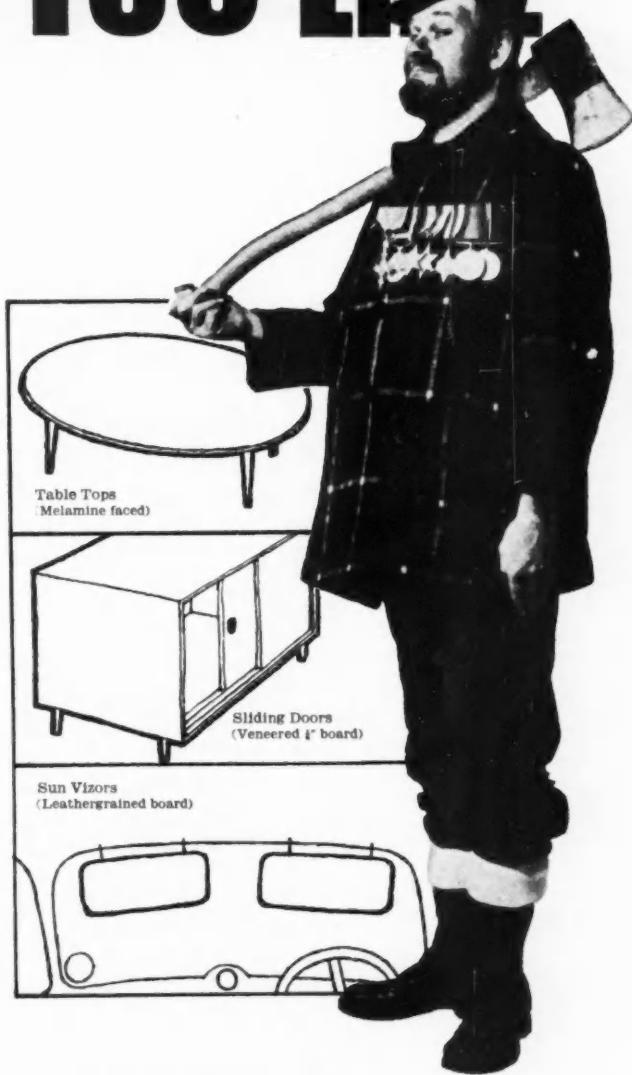
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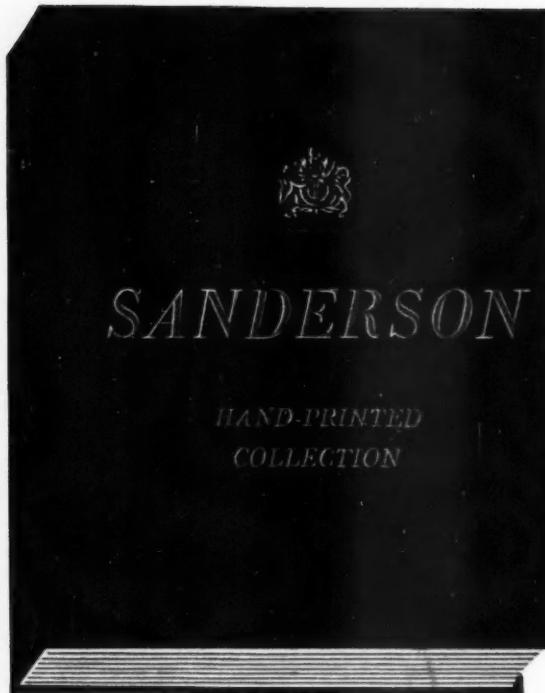


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Number 127

July 1959

# Design

## Printing Dispute

It is intended to publish all issues of DESIGN. Owing to a change in printers the September issue may be published before the August. Probable dates are: the August issue by the end of September; the September issue by mid-month; October issue on normal date.

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SWITZERLAND *Alfred Altherr*

USA *Lazette Van Houten*

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Speed of communication can make possible the change from the crude and inhuman industrial system of mechanisation, to the subtle and humane system which is now beginning under the name of automation. The article describes some of the new machines which will introduce the second industrial revolution

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An impressive new range of drawing office furniture designed according to anatomical principles, fills a very real need on the British market

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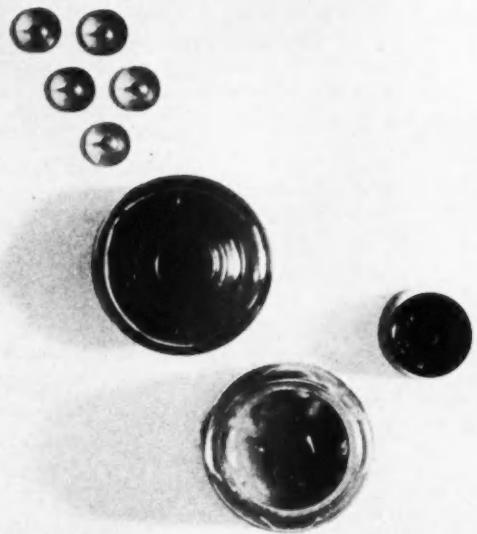
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## The pall of tradition

This extract will have a familiar toll to readers of DESIGN:

"We feel that a slavish imitation of foreign styles will not do our export trade any good in the long run. If we are to maintain the reputation of British goods abroad, it is essential to create new and distinctive styles which will compel the world to look to this country for a lead - even though it may well be safer and more profitable in the short run for industrial firms to conform to the popular conception of British tradition."

This is not, as many readers might suppose, the introduction to the annual report of the Coid, or indeed a quotation from this page on the many occasions when we have urged manufacturers to extend rather than repeat the British reputation for fine design. These words in fact come from the report\* recently issued by the working party set up by the Federation of British Industries to examine the export facilities available to manufacturers. The party consisted of Sir Cecil Weir, of International Computers and Tabulators Ltd, as its chairman and nine other distinguished businessmen.

In the report's section on Export Trade Promotion, design and packaging are dealt with first and exporters are warned that they can no longer rely solely on our past reputation for quality and good taste, and that the design requirements of some markets, such as North America, need closer study. Credit is given to the Coid for its efforts to promote good British design, efforts which the working party considered have an important bearing on the success of our export trade; in particular are mentioned the service The Design Centre provides for overseas buyers and the selective exhibitions of goods which the Council frequently mounts at the request of the Board of Trade.

The FBI points out that these opinions, although unanimous, belong to the members of the working party and are not to be attributed to the federation. But these views on design are unlikely to fall on deaf ears in Tothill Street. Latterly it has become very obvious that the FBI has pushed design up several notches on its list of priorities and has actively concerned itself with the problem of obtaining for industry an adequate supply of designers of the right calibre and qualifications (see page 65). All this points to that progressive industrial outlook which the working party urges British firms to adopt, in order to minimise the danger of over-publicising the traditional aspects and products of Britain which appeal to popular sentiment, at the expense of our reputation as a forward-looking people meeting the challenge of world competition.

J.N.W.

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# Pointers

## Celtic jargon

If you turned on your television set absent-mindedly at lunch time a few Sundays ago, you saw a domestic episode in a very modern setting. Unless your knowledge of languages is more than usually good you needed sub-titles to explain why the harassed-looking hero and the pretty heroine were so concerned about the marble-topped coffee table at their feet. Bloodstains perhaps? Or was it here that the body was found? If you went on watching you probably hit on a clue. Every now and then the characters exchanged meaningful glances and murmured "Design Centre" or "Council of Industrial Design", and then slipped back into their own language. This was not an Italian thriller set in Haymarket, but a Welsh programme about the Cold.

My own knowledge of Welsh limits me to ordering warm cheese on burnt toast, but I enjoyed sitting in on the rehearsal for this programme. The people taking part, including an architect and an architectural student, had enormous difficulty in translating design jargon into Welsh. I wish I knew how successful they were in their search for simple, if roundabout, ways of talking about design. We could all do with a good purge of designers' mumbo-jumbo.

## Spades as spades

It is this absence of mumbo-jumbo that keeps The Design Centre in touch with the shorter-haired public. The exhibition's organisers usually present facts only. There is no attempt – as in other design exhibitions – to use a lot of pretty white on black typography, which is too large or too small to read with ease, and is too esoteric for the average visitor to understand, and when critical comments are included as they are in the annual *Designs of the Year* exhibition in the Centre, an attempt is made to avoid the sort of language that gives design a reputation for being a remote and specialised subject. There is no mention of chairs having "memorable sculptural images", light fittings being "sensitive" or heaters "sitting well in space in an architectural manner". In preparing their reports the judges hoped that visitors would see quite clearly why the chosen products were thought to be the outstanding designs shown in the Centre in the previous year. There's a lot to be said for clear thinking and speaking on a subject that is part of so much that we see and do every day.

## Communications primarily

Nevertheless, I believe that a lot of people who are professionally interested in design prefer antics with semantics – the sort of thing that Charles Eames does so efficiently, and has just done yet again in his RIBA

discourse. I have written too often and in too many places about the incoherence of American designers, but I can't let Mr Eames' latest performance pass without saying that professional designers and their magazines really must stop pretending that his obscure remarks are full of deep significance.

Just to show how easily he muddles the simplest of thoughts let me quote what he said of the theories of men like Lloyd Wright and Mies van der Rohe. "We should take these pinnacles", he said, "and weave them together as a web to form a platform upon which we can stand and from which we could reach out."

When it comes to communicating the basic pattern of his design philosophy – I beg your pardon; what I mean is that when he tries to say why he designs the way he does, Mr Eames is an even greater murderer of the language. I have a copy of his discourse in front of me and I am prepared to have it set in a gold frame and studded with diamonds for the first person who can convince me that it means anything. Even Mr Eames is worried. He has promised to rewrite it for the *RIBA Journal*. I look forward to seeing if he really knows what he thinks he was trying to tell his alloplastic audience.

## Lunamatics

What, you may ask, is alloplastic? Alloplastic, according to an angry young American design instructor, is what Man is – ie he changes the environment to fit himself. This instructor, Victor J. Papanek, who teaches third-year students in the Creative Engineering Seminar of Orleans College of Art, believes that students are not often forced into "new cortical associations". In other words, he says, they don't plant their feet firmly on pink clouds; they are too much caught up in what's been done before. He himself is trying to put this right. Each project he gives his students is selected "to invoke either a basic natural principle that has not yet found design application, or else a combination of requirements which are totally unrelated to the student's previous experience". This makes good sense, but the projects Mr Papanek has illustrated in a recent issue of America's *Industrial Design*, including several ways of correcting some of the faults of the present typewriter keyboard, are not impressive.

It is true, of course, that too little thought is given by manufacturers to new solutions of *new* problems. The business of everyone jumping on the same bandwagon for fear of being out of fashion doesn't lead to new developments. It is good, therefore, to hear that American designers are raising money to sponsor a Bill to prevent design piracy and to protect industry and the consumer against the kind of decline that is apparent in the car industry. It is good, too, to hear that at least four American designers are busy on something very new: they are working on structures that will withstand changes in temperature from a blistering 200°F at noon to 250° below zero at midnight but will not have to keep the rain out. These structures will also have to float in a stationary ocean of dust. They are – wait for it – the first examples of lunar architecture.

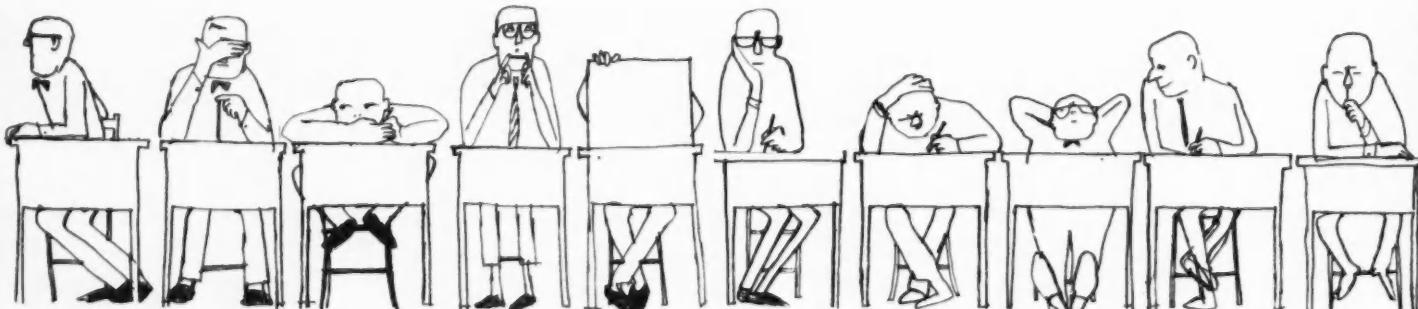
KENNETH J. ROBINSON

# COMMUNICATING WITH MACHINES

LEONARD GROSBARD

The unimaginable speeds, fantastic costs and superhuman powers of information machines should not be allowed to hide from us the very orderly and ordinary tasks which they are intended to carry out. All this complexity and expense and ingenuity goes to provide only one characteristic that is not shared by our present system of recording, communicating and computing through reading, writing and arithmetic. That characteristic is speed. As was stated in previous articles (*Automation and Design* July 1957–February 1958) speed of communication is the one thing that makes possible the change from the crude and inhuman industrial system that we have known in the past, and call *mechanisation*, to the subtle and humane system which is now beginning under the name of *automation*. Only by replacing the inherently slow and costly means of handling information on paper by the fast and cheap means of handling it by electricity can we overcome all such mechanical maladies as air pollution, rush hours, ignorance of user requirements, commercial styling, mass persuasion, and the host of mental and physical stresses that make up industrial life as it is experienced now. The ways in which vast and welcome, and perhaps unexpected, changes can come about will be a little clearer if the kinds of machines described here are thought of in relation to the services they could provide for the people who may eventually use them.

*drawings by Roger Coleman*



*Computers can do in minutes phenomenal calculations that would take desk-bound mathematicians months . . .*

It is well known that electronic computers are fast and do in minutes phenomenal calculations that would take desk-bound mathematicians months. One computer will do 830 separate additions or 290 multiplications in one second and, as an example of its speed in dealing with more complicated problems, it will solve 80 simultaneous equations in five hours. Yet, computers are not fast enough and prodigious feats of design are being performed to speed them up although, as with aircraft designers and their sound barrier, there appears to be a similar barrier for the electronics engineer. If computers are to become faster, they have to be more complex, which means they must be larger; but if they are more than a certain critical size the time-lag due to distance affects the speed of operation. This problem is of more concern to the scientific user (where computer speed is all important) than to the commercial user who requires comparatively little work to be done on an enormous amount of information, and so in his case the most promising way of increasing speed is to improve the input devices.

Although computers, being electronic, work at approximately 186,000 miles per second – the speed of light – their input devices are electro-mechanical and so the preparatory work before feeding them takes a great deal longer than the actual operating time. The usual input devices are punched tape, magnetic tape, and punched cards, and although there is no bottleneck once the information to be processed is in one of these forms, they are relatively slow to prepare in the first place as they all depend upon a human operator, sitting at a keyboard similar to that of a teleprinter, reading the written information, recognising it and pressing the appropriate keys which punch or magnetise the cards or tapes. There are two ways of dealing with the problem: one is to attach to recording devices such as typewriters, cash registers and ticket machines, a tape-

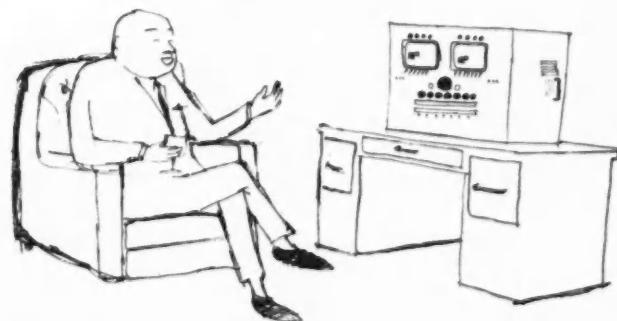
writer which makes a tape record as well as a written one. This tape can then be fed direct to a computer.

The main disadvantage of this method is that it could be costly to add tapewriters to cash registers, petrol pumps, etc, especially since the written record would in many cases still be needed. The other way is to read the primary or written information directly by electronic means and to pass this information to the computer in binary language. There have been two attempts at this method, by Solartron Business Machines Ltd, with its Electronic Reading Automaton – ERA, 1; and by EMI Electronics Ltd, makers of the Figure Reading Electronic Device – FRED. Of the two systems the Solartron ERA is the more ambitious as it has been designed to read any typeface; EMI's FRED reads only one special typeface.

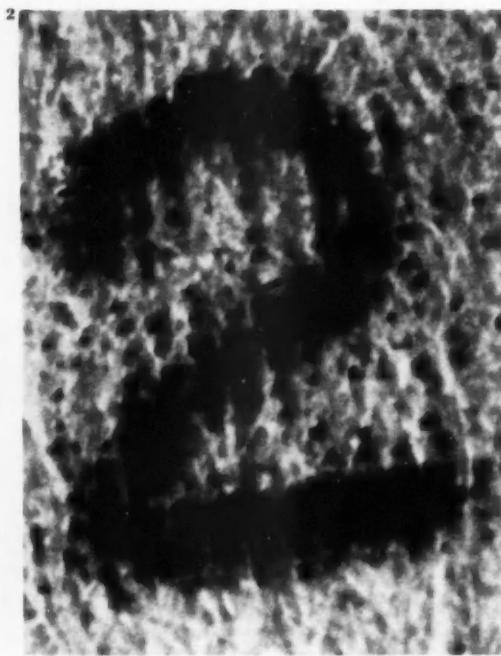
#### Tally roll to tape

The first of the Solartron machines has been ordered by Boots Pure Drug Co Ltd, and is to be installed at its Nottingham headquarters. Its job there will be to read cash register tally rolls sent in from the firm's 1,300 branches throughout the country and feed this information direct to an electronic computer. ERA will read 200–300 characters per second from either moving or stationary documents and it can be programmed to read either one or more selected parts without moving the document itself. A reading ability of 300 characters per second is equivalent to reading a sheet of double spaced quarto paper in two seconds. This speed is not a maximum but owing to limitations in the rate at which paper can be fed into the reader, there is no point in increasing it at the moment. It can be programmed for a given typeface and will accept slight variations in typefont without new programming. The cost of a machine reading from tally rolls is approximately £25,000; it is claimed that ERA will reduce the present

*... but a bottleneck occurs  
when an enormous amount of information  
has to be processed by a human operator  
before being fed to the computer.*



*This laborious process can be avoided by machines which read,  
as described in this article; but even these machines could be  
replaced by others which hear and speak.*

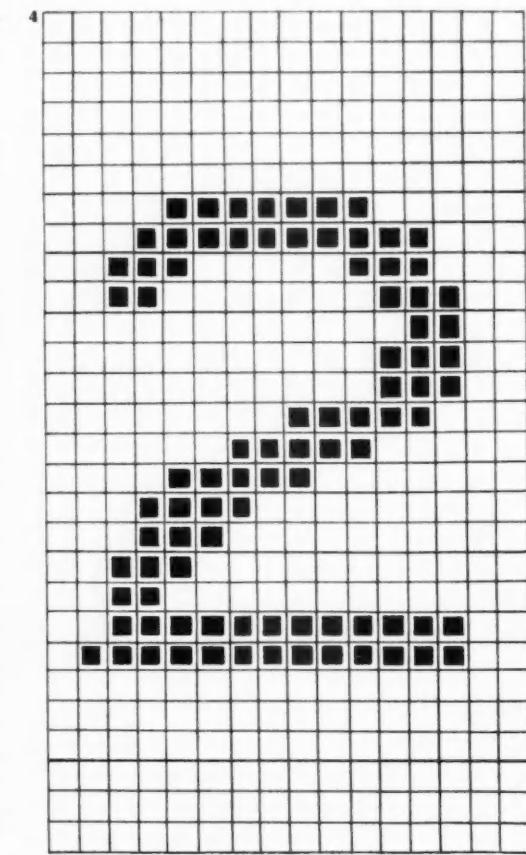
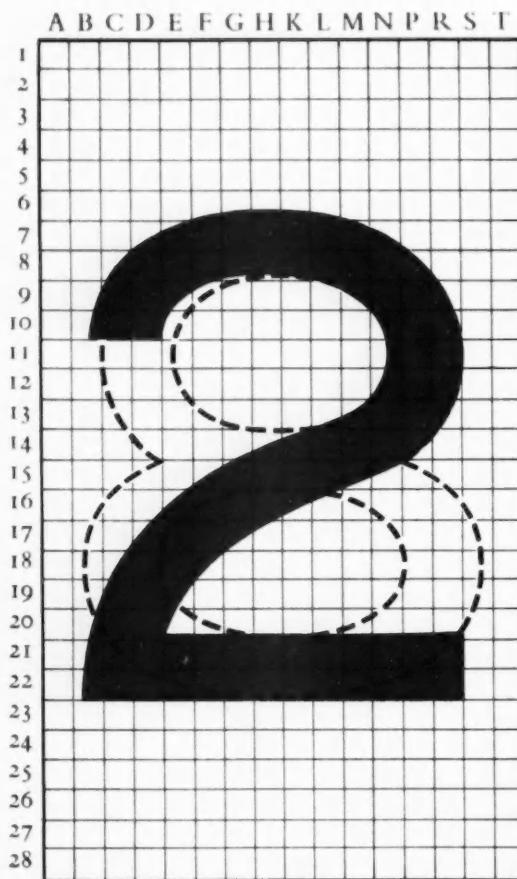


1 The operator feeds a cash register tally roll into the magazine of the Solartron Electronic Reading Automaton.

2 This enlarged but fairly typical second carbon of a figure 2 as produced by a typewriter shows how, in practice, ERA needs to read imperfect, misaligned and blurred characters.

3 ERA divides each reading area into 448 squares, similar to the grid in 3, and each square is electronically scanned. This detailed examination makes it possible for the circuit logic to distinguish between characters having as much in common as 2 and 8, even when both are as distorted as the character in 2.

4 A typical pattern created in the information store by a 2. The store is filled with 448 bits of black and white information at the completion of each character reading cycle which takes 1.300 second. When these patterns coincide with the preprogrammed ones the character is recognised and the reading cycle starts for the next character.



cost of feeding a digital computer by up to 90 per cent. It is hoped that ERA will make the digital computer an economic proposition to many commercial users who otherwise might find the cost of feeding one excessive.

ERA works in the following manner. The paper on which the characters are printed is fed into the reader and an electronic flying spot scanner scans each character, 2. In fact, it scans each one twice: once to see if it is in correct alignment (if not the scanner shifts, it being quicker to shift the scanner – at the speed of light – than to move the paper), and once to read it. In the reading process each character is broken down into a large number of squares and each one is separately scanned, providing the same number of bits of information, each bit corresponding to a black or white square, 3 and 4. In fact, four bits of information are all that is needed to read the characters 0 to 9, so an enormous amount of redundant information is present making the effect of errors small enough to be neglected. This degree of redundancy overcomes the unreliability of information due to blurred figures, dirt, paper grains and folds in the paper.

#### Black and white in character

The light reflected from each square of the scanned character is proportional to the luminance of the reflecting surface, ie the white paper reflects more light than the black character. This reflected light is converted to electrical signals which are then amplified and clipped. The clipping operation sets the level above which everything is considered as white and below which as black. Each pulse is then fed to the store and at the end of the reading cycle the store is filled. The signals then pass from the store to a logical network that decides what the character is. The character having been recognised, the output appears as a pulse on one of 10 wires, each wire corresponding to the figures 0 to 9. The pulses can operate a keyboard in the same way as do punched tape outputs or, more importantly, they can be used to feed the computer directly. For this purpose the numerals are retained in the computer's binary language, in a temporary store, which is then gated by pulses from the computer.

FRED does a similar job but in a much simpler fashion as it has been designed to read only one special typeface, 5, similar to the display face *Broadway*. The key to its simplicity can be seen by studying this typeface. Instead of the more usual arrangements of thick and thin strokes this face has the thick areas very much thicker and the thin ones even thinner by comparison. The thick and thin areas have also been especially disposed with relation to the vertical plane.

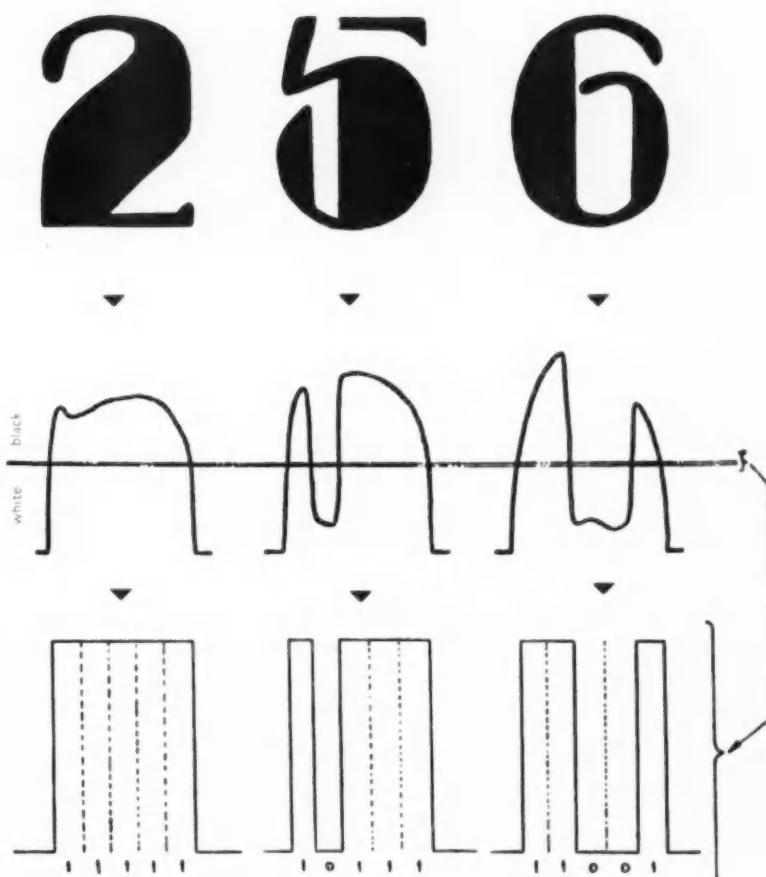
The reason for this is that each character in process of being read is broken down into five areas, each of rectangular shape running from top to bottom. Thus each rectangle is either predominantly black or white – above 65 per cent black = black and below 35 per cent black = white. As in Morse code, each arrangement of five blacks and whites represents a character.

FRED can also read magnetically with the aid of specially prepared inks. These magnetic inks have

definite advantages where the documents to be read have to be passed through several hands and are likely to accumulate overprints or be defaced. Whether reading optically or magnetically FRED can operate at extremely high speeds of thousands of characters a second; the maximum speed being determined by the mechanical limitations of feeding paper rather than by the electronics involved.

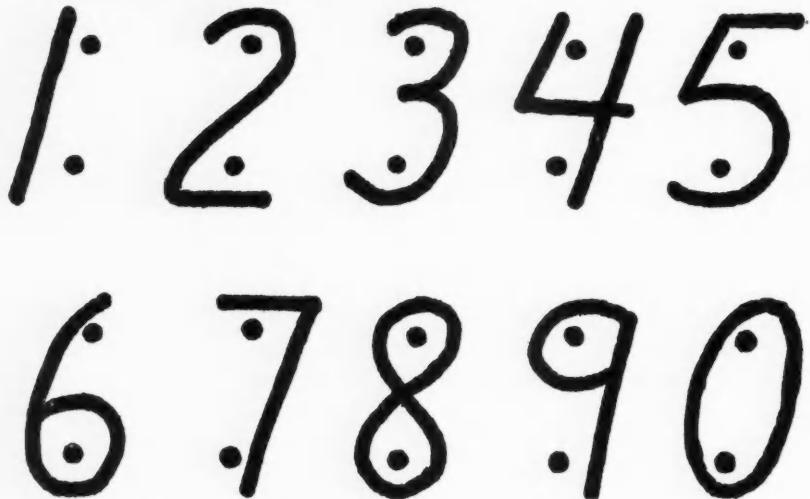
#### Techniques in prospect

These two rather different approaches to electronic reading highlight the overall problem of communication with machines. Since most of the information needed by machines originates in the minds of humans, what are required are methods by which human forms of expression can be understood by machines without the need for either translation or special forms of language. World patent literature discloses many systems of specially formed symbols which could be easily recognised by machines, and of course, FRED, which

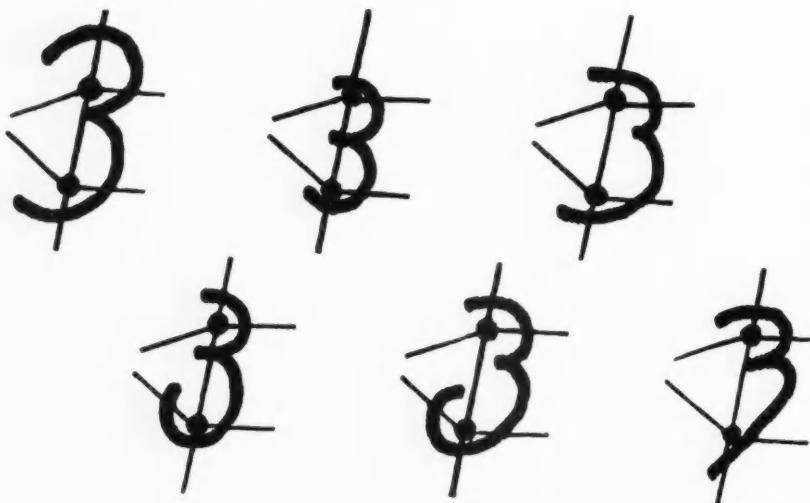


5 This typeface has been specially designed for EMI's Figure Reading Electronic Device, FRED. In the sequence shown here the numeral is read by a photo-electric scanner which produces a varying electrical signal, CENTRE, which in turn is clipped to produce the simplified identification, BOTTOM. When viewed through a grid of five vertical rectangular slots, each will be either predominantly black or white, and FRED decides that everything below 35 per cent black = white. As in Morse code each arrangement of five blacks and whites represents a character. Figure 6 is black, black, white, white, black, or to translate into the binary language of the computer 6 is 11001, 5 is 10111 and 2 is 11111, or all black.

## Reading the character in handwriting



One solution to the problem of machine reading of handwritten numerals is the two-dot constraint method suggested by Dr Dimond of the Bell Telephone Laboratories, USA. These dots control the writing and make possible the recognition of numerals which can vary in size, disposition and shape as much as the ones shown here. They also act as the origins of the radius vectors which, when they are traversed by the lines making up the numeral, enable the machine to recognise the numeral. The wide tolerance acceptable is shown BELOW. There is also a four-dot constraint method for machine reading of letters which works in much the same manner.



was designed to be simple, reliable and economical, is really a variation of this type.

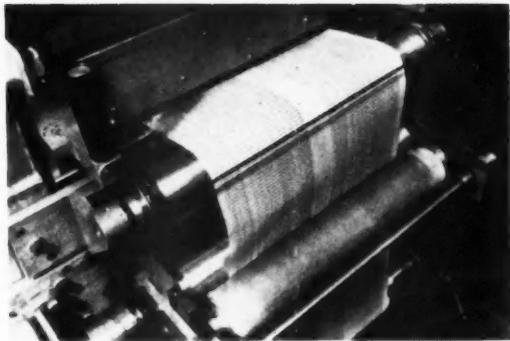
Many firms are working on this problem and despite the fact that ERA is ahead it cannot be long before someone is treading on its heels. Dr T. L. Dimond of Bell Telephone Co, describes in a paper\* methods and devices which permit automatic machine reading of handwriting. These call for a certain constraint on the writer to place the characters about a series of dots, 6. It is only suitable for block letters, but this restriction will probably apply to all reading machines, the difficulties of reading handwriting being so great as sometimes to prevent even the writer from reading his own. The Bell system is simple and would therefore be comparatively cheap.

Another way of communicating with machines would be to talk to them and research on this is currently being done by Dr Andrew D. Booth of the department of numerical automation at London University. Sponsored by Boots it is aimed at producing a system suitable for use in stocktaking, where the stocktaker would speak the amounts of the particular serial number of product into a microphone coupled to a computer, instead of writing it on a form which would later be fed into a computer. The need for doing away with bits of paper is far more urgent than at first seems likely. Dr Dimond says in his paper that Bell Telephones' long distance operators record each call on a paper ticket. This seems a reasonable method of working until it is realised that there are 2,000,000,000 such calls each year with between 20-30 characters of information per call; to transcribe this to punch cards for feeding to a computer would cost \$32,000,000 per year.

### Electronic news printing

The revolution wrought by electronics in the entertainment world, now responsible for cinema closures on a small scale and eventually for the extinction of some forms of live entertainment, seems destined to cause similar havoc in the publishing world, where electronic printing machines are just around the corner. The Rank Xeronic, 7, for example, can print as many as 3,000 lines of type per minute, each line being up to 26 inches long. In this machine the characters to be printed appear on the face of a cathode ray tube, like the normal television picture. Each spot of light from the tube, in the shape of a character, falls on to the

\*Devices for Reading Handwritten Characters, presented to Eastern Joint Computer Conference, Washington, DC, December 1957.



7 The Xeronic electronic printing machine, made by Rank Precision Industries Ltd, will print 3,000 lines a minute (128 characters to a line). In the same operation it will also print its own forms to contain the information.

magnetised surface of a drum which rotates in front of the tube. The light demagnetises an area of the drum corresponding to the character and a powder which only adheres to the demagnetised areas is then introduced. A roll of paper is fed across the drum and the powder is transferred and then printed on the paper by a heating device.

An even more recent electronic printing device, 8, developed jointly by Burroughs and the US Army Signals Corps has a theoretical top speed of 500,000 words per minute, the practical limit being set by the rate at which paper can be fed into the machine. This device uses a special coated paper which responds to beams of electrons. It is claimed that this paper costs only a little more than ordinary paper, and in a short time may be as cheap as newspaper.

There is no reason why machines such as these should not in time be completely versatile, printing photographs and a wide range of typefaces in full colour. They might easily cause the wholesale reorganisation of newspaper and magazine distribution. Newspapers could be edited in London and beamed out by microwaves to regional electronic printing and distribution centres, the contents being changed almost continuously as the news varied. Going one step further and eliminating the newsboy, the regions could beam the newspaper direct to local subscribers. These techniques could equally be applied to the Post Office; apart from a service for the delivery of parcels, etc, the postman could be relegated (along with the newsboy) to the same sort of role now enjoyed by town criers. The techniques could also be used internationally, the messages being sent from one continent to another via orbiting space ships.

#### Nervous interceptors

There are other developments which bear on this problem of communication with machines. The Americans, faced with the problem of evaluating an aircraft pilot's performance against a known standard have adopted techniques similar to those used in electro-encephalography where the radio waves emanating from the brain of a deranged person are compared with those of more normal ones. They have devised a sort of doughnut which fits over the pilot's head and picks up signals from his brain. These monitored waves are used to compare his performance and reaction - when confronted with specific situations - with that of a known

standard performance.

Russian scientists at the Research Institute for Prostheses, Moscow, are working on an artificial limb which will respond when fed with electrical impulses, in the same way that we respond and our muscles contract when in receipt of similar electrical impulses via the brain. The April issue of the American magazine, *Electrical Manufacturing*, reports that the human links in communication systems, such as eyes and ears, can be simulated by means of relatively simple transistor circuits developed at Bell Telephone Laboratories. Artificial nerve cells have been combined into experimental electronic circuits that are roughly analogous to the nerve systems of the eye and ear. The purpose of the devices is to study and determine how visual and auditory nerves actually function and how they react to various sensory signal inputs. Results of such studies can improve communications designs.

Dr Booth has already designed a machine which will automatically translate one language into another, taking in its stride such problems as changing from one idiom to another. It will translate up to 3,000 words per hour and could be programmed for any language. That this is not particularly fast - an efficient human translator will do as well - may account for the fact that no one wants to put it on the market at the moment; but, if only because of its versatility, it cannot remain in the laboratory for long.

Among machines currently under consideration is one to help in medical diagnosis where the symptoms of one disease are often very similar to those of another. To overcome the very human error of concentrating on the first apparently correct diagnosis, the machine would give in descending order of probability a complete list of diseases corresponding to the details of the symptoms fed into the machine, together with a list of appropriate treatments. Another machine for lawyers would have on file all legal precedents thoroughly cross-referenced. With present filing systems this is almost impossible.

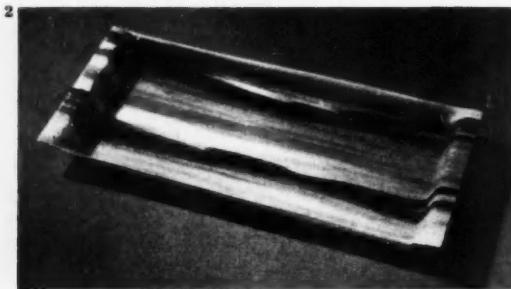
Others are working on machines which will speak - an audible output instead of a printed one - and machines which recognise shapes and patterns. Added together these developments may seem a daunting prospect, but by the time they materialise we shall have conditioned ourselves so well that we shall consider them to be little more than what in fact they really are, more labour saving devices.



8 A joint development of the US Army Signals Corps and the Burroughs Corporation, this electronic printer has a theoretical top speed of 500,000 words a minute.

# Review of current design

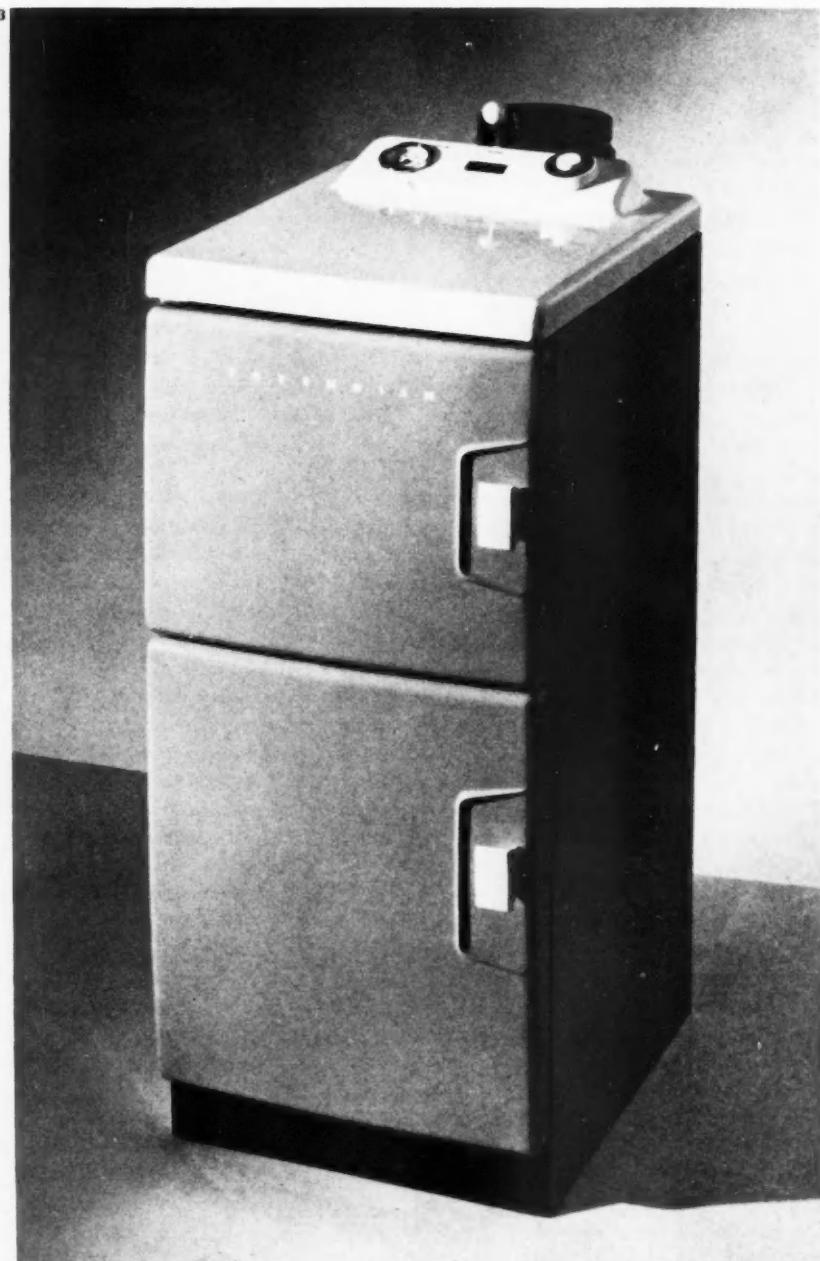
*A selection of items recently accepted for inclusion in 'Design Index', the CoID's photographic and sample record of current well designed British goods. 'Design Index' forms an essential part of The Design Centre, 28 Haymarket, SW1, which is open on weekdays from 9.30 am - 5.30 pm, and on each Wednesday and Thursday until 7 pm.*



1 Easy chair (427) with beech frame, available with natural or ebonised finish. DESIGNER Lucian B. Ercolani. MAKER Furniture Industries Ltd. From £13 13s.

2 Tray in polished Perspex, available in marbled or plain colours. MAKER X-Lon Products. £4 4s (marbled); £3 15s (plain). Width 9½ inches, length 21 inches.

3 Cavendish thermostatically controlled solid fuel boiler, made of steel and cast iron. (Also available for oil burning.) DESIGNERS Firm's design staff in collaboration with Alec Kirkbride. MAKER Crane Ltd. From £42. Height 37 inches, depth from 21–30 inches, width 15½ inches.



4



John Cole

5



6



7



**4** Sideboard (800 1), with Weyroc doors veneered in afrormosia; the frame is in solid afrormosia. DESIGNER Richard B. Hornby. MAKER Henry Stone & Son (Furniture) Ltd. £35 14s 6d.

**5** Rolcut toggle lopper (model 17) made in steel, brass and aluminium with rubber handles. All the parts are replaceable. £3. Length 28 inches.

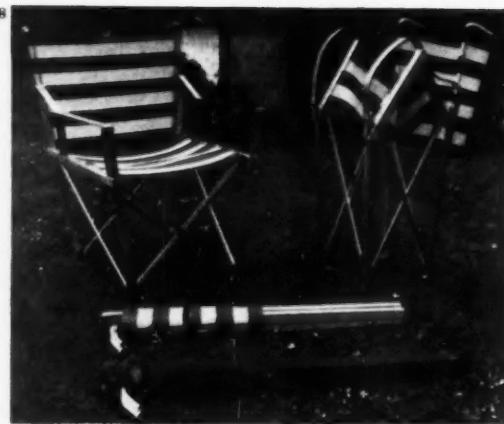
**6** Royal Worcester tableware (shape Berkeley Z. 2697 Snow), in English bone china. DESIGNERS D. M. Reeves and K. M. Hills. MAKER The Worcester Royal Porcelain Co Ltd. Prices from maker.

**7** Watajoy suitcase (Fantome XX); the frame is in plywood, covered with Duracour. The fittings are in chromium plated solid brass. DESIGNER John W. Waterer. MAKER S. Clarke & Co Ltd. £7 19s (21-inch); £8 6s 6d (24-inch); £8 14s (27-inch).

REVIEW OF CURRENT DESIGN

**8** Spector folding chairs, with aluminium frames, Tygan or Duracour seats and backs, and leather armrests. DESIGNER O. F. Maclarens. MAKER Andreus Maclarens Ltd. £5 5s; (leather bound fabric case £1 10s extra).

**9** Burco boiler (310 AS), with wringer and electric pump, which will take 5-7 lbs of dry clothes. DESIGNER Charles Ledger and firm's product design office. MAKER Burco Ltd. £29 2s 6d (agitator unit 14s 6d extra).



**9**



**10**



**10** Jug and tumbler (52965) in full lead crystal glass. Open stock. DESIGNER David Hammond. MAKER Thomas Webb & Sons. Jug £2 10s; tumblers £8 8s a dozen.

**11** Lotus spiral hand washbasin (1173) in vitreous glazed sanitary fireclay. DESIGNER Alan H. Adams. MAKER Adamsez Ltd. £5 10s 9d (basin; fittings extra).

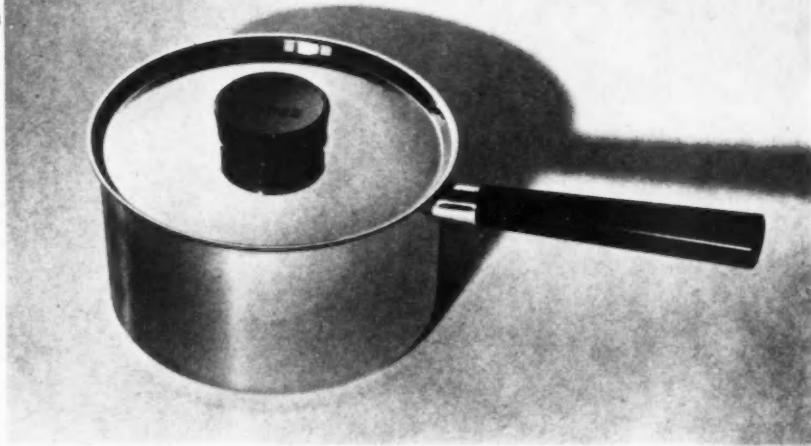
**12** Lighting fitting (HN 0200), with acrylic plastics shade and mild steel metal parts, stove enamelled matt black. Consumption 150-200 watts. DESIGNER Richard Stevens. MAKER Atlas Lighting Ltd. Shade £1 17s; cable suspension set 7s 6d; rod suspension set 11s. (Height 12 inches, diameter 12 inches.)



**11**

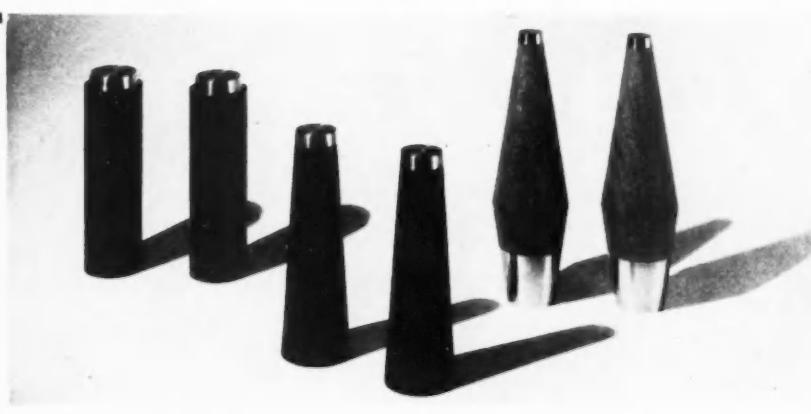


13



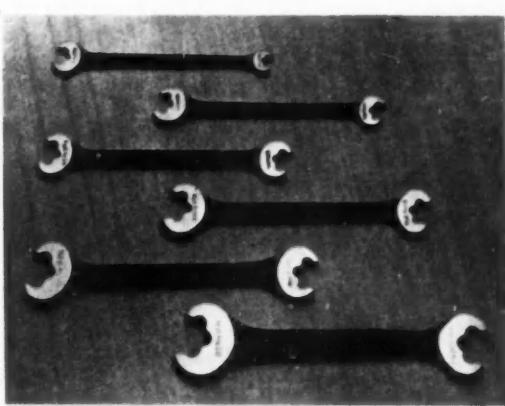
**13** Judge stainless steel saucepan, with plastics knob and handle. DESIGNERS Misha Black and Ronald Armstrong of Design Research Unit. MAKER Ernest Stevens Ltd. From £2 1s 6d.

14

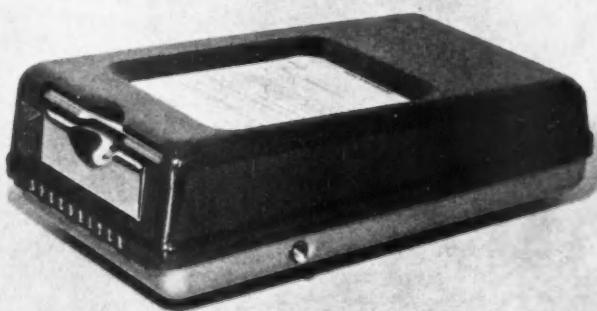


**14** Condiment sets (left model 28 8, centre 29 8, right 27 8); 28 8 and 29 8 are in rosewood, 27 8 in teak. Satin finish stainless steel is used in all three sets. DESIGNER and MAKER John F. Hardy. £3 3s (28 8 and 29 8); £4 4s (27 8).

17

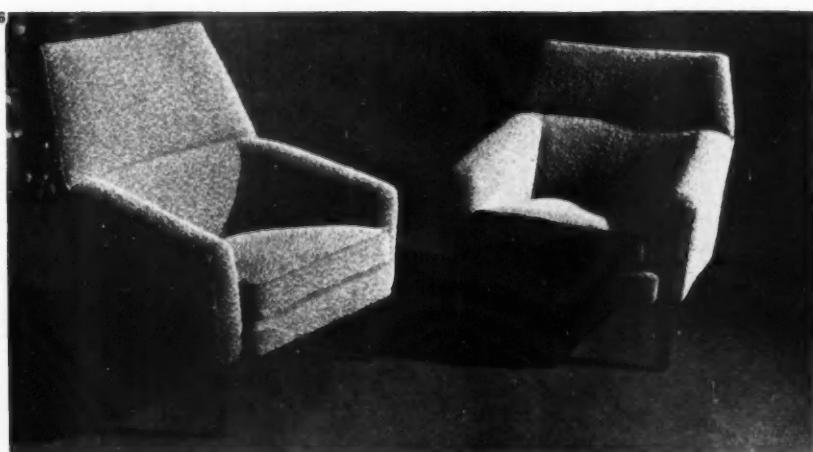


15



**15** Speedriter hand operated portable autographic manifolding register (model 664); made of 18 swg aluminium and brass sheet, chromium plated over nickel plate. DESIGNERS H. G. A. Newman and design staff of Redwing Ltd. MAKER Egry Ltd. Price from maker.

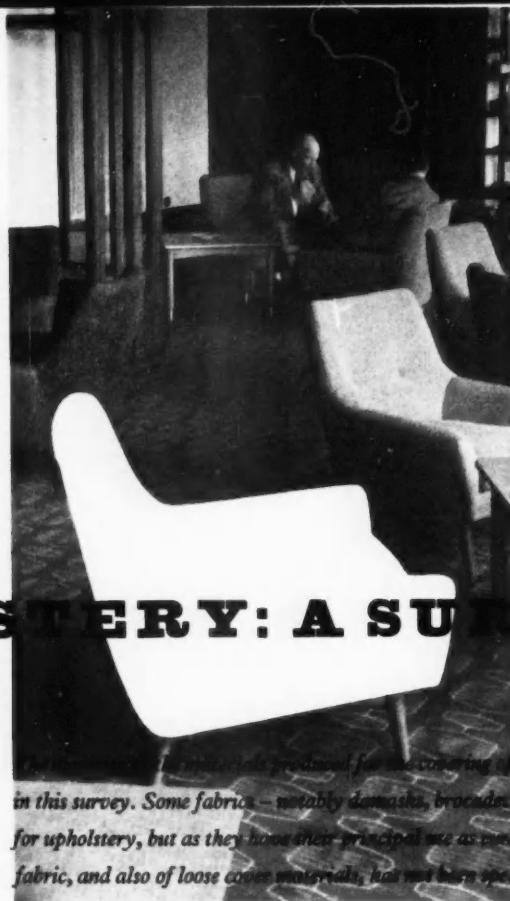
16



**16** Heritage high and low backed chairs, with frames and legs in beech or rosewood, upholstered in Latex foam cushions on Pirelli webbing. DESIGNER Robert Heritage. MAKER Cambridge Furniture (1953) Ltd. From £28 17s 6d (low back), and £29 0s 6d (high back).

**17** BNT spanners (model Surpass 4/4), in 6 to 7 per cent carbon steel, finished in black enamel with ground faces. MAKER Brades Nash Tyzack Ltd. From 2s 4d - 5s 8d each.

All retail prices quoted  
are approximate and include  
purchase tax where applicable.



Hotel Leofric, Ind. Comp & Allisop Ltd.

## UPHOLSTERY: A SURVEY

*The requirements of materials prepared for use as covering for upholstered furniture are described in this survey. Some fabrics – notably damasks, brocades and glazed cotton prints – are used for upholstery, but as they have their principal use as curtains, the design of this type of fabric, and also of loose cover materials, has not been specifically considered.*

DAN JOHNSTON  
*Industrial Officer, CoID*

A good upholstery material must satisfy a number of requirements. It should be hard wearing. It should not soil easily, and when dirty it should be possible to clean it. It should be reasonably elastic so that it can be stretched to give a neat fit and then not sag in use. Colours should be fast to rubbing, reach a good standard of fastness to light, and also be fast to reasonable cleaning.

In addition to these practical requirements a good covering fabric must add character to the furniture on which it is used. Combinations of texture, pattern and colour can give a quality of richness and luxury; on the other hand, upholstery may, if required, be austere or severely functional.

Price of course is an important consideration. For a requirement that is as fundamental and as traditional as upholstery it is not surprising that certain natural materials have been developed to the stage where they are still the best in their class. Leather and wool are two such natural materials. Good leather, like most upholstery materials, needs some care in use, but it satisfies all the requirements listed above. It is, however, expensive in comparison with plastics coated fabrics, so that there is now a very large market for what were at first considered substitute materials. Wool in many fabric forms from moquette to simple textures is warm and resilient. Its one major advantage over other textile fibres is that it wears clean, but it is also one of the more expensive materials. Cotton and rayon are much cheaper and for that reason are extensively used either alone or in blends with wool. Because of their durability there is

also a growing demand for the newer synthetic fibres such as nylon and Terylene.

The degree of wear to which upholstery materials are subjected varies enormously. Molettes of the quality thought necessary for public transport would be too expensive, and unnecessarily hard wearing, for normal domestic upholstery. There is a special opportunity in aircraft for the lighter weight fabrics made from the very durable synthetic yarns, which again will tend to be too dear for large scale use on furniture for the home. In hotels, restaurants and bars it may be that ease of cleaning will become the most important factor governing the choice of upholstery fabrics. Silicone finishes and fabrics backed with Latex to prevent the wadding in the upholstery from getting wet when stains are sponged away will be in greater demand. In cars and even in the home different requirements call for very different upholstery treatments.

There is generally close co-operation between producers of upholstery materials and furniture manufacturers. This does not mean, however, that the user industry is always satisfied with the supplier, and vice versa. The normal complaint of the go-ahead furniture manufacturer is that the fabric producers want longer runs on new cloths than can at once be justified. The counter complaint is that furniture manufacturers are unduly conservative and are unwilling to give new developments a proper chance.

It is, of course, understandable that fabric manufacturers are frequently under pressure to confine their more successful designs and even fabric types to particular

furniture manufacturers. This pressure for confined designs brings with it a need for constant experiment which fabric manufacturers do their best to meet by extensive sampling. Nevertheless, some of the leading manufacturers of upholstered furniture find the inventiveness of British producers to be insufficient. Short runs of covering materials are imported from several Continental countries because of the high standard of their design; it is, however, only fair to add that much larger quantities of very mediocre coverings are brought in for reason of price, and price alone.

The total output of British upholstery materials, leather, coated fabrics and woven materials, amounts to about £27 million a year. Imports are chiefly of cotton and wool moquettes from Belgium — about £4 million a year — while annual exports amount to some £3 million, coated fabrics and leather playing an important part.

### **leather**

Leather is hard wearing, has a traditional quality of masculine luxury, and does not feel cold to the touch. The excellence of today's colour ranges has given leather a new and more feminine appeal which has yet to be fully exploited by furniture manufacturers. The material upholsters well and is easily cleaned by sponging down with warm soap and water. Leather upholstery is sometimes damaged if it is placed too close to heat and open fires.

A demonstration of colour possibilities in leather for upholstery. The fact that some manufacturers can supply over 100 colours indicates that there are more interesting applications for leather than its conventional use on the club armchair. MAKER Connolly Bros (Curriers) Ltd. Further details concerning leather generally can be obtained from The Leather Institute, 17-19 Barter St, WC1.





Prototype for British Railways

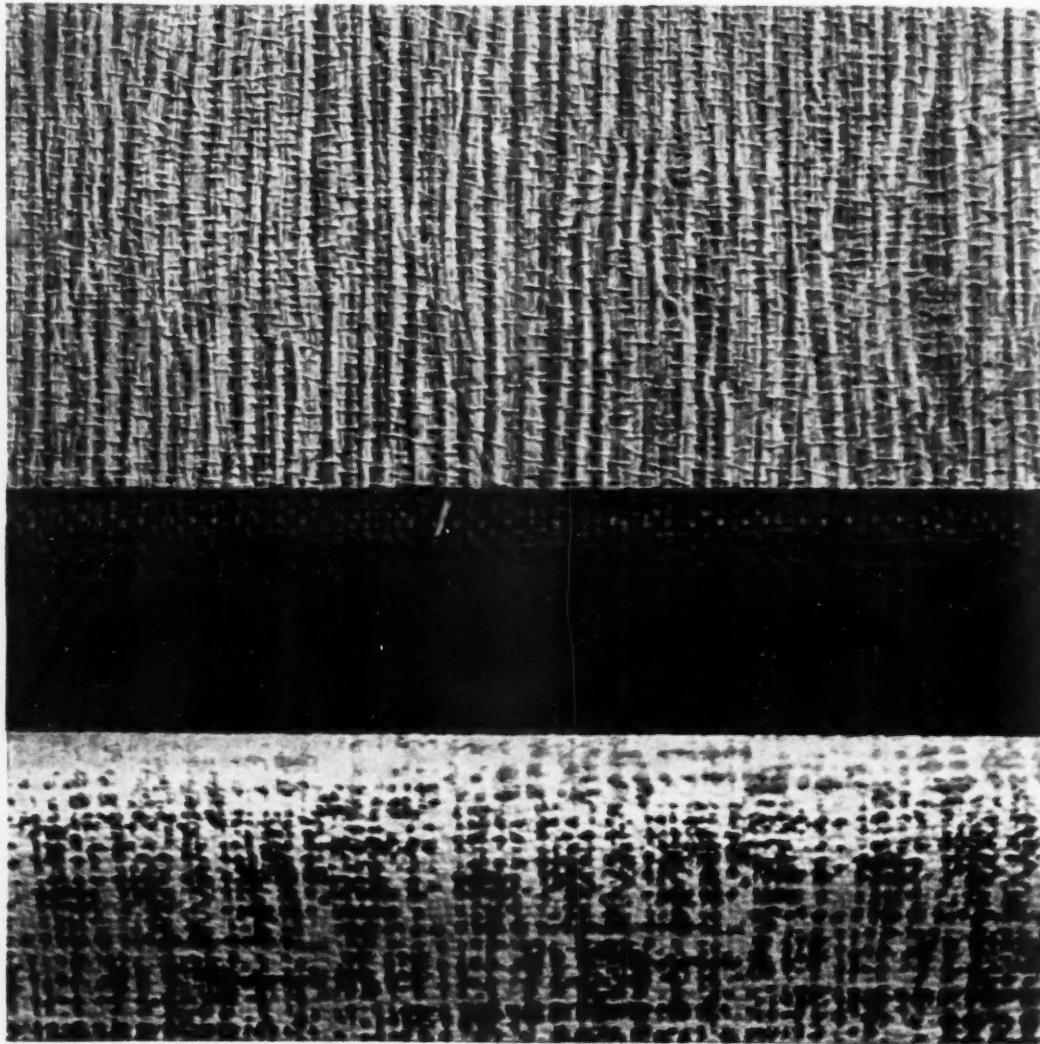
## plastics coated fabrics

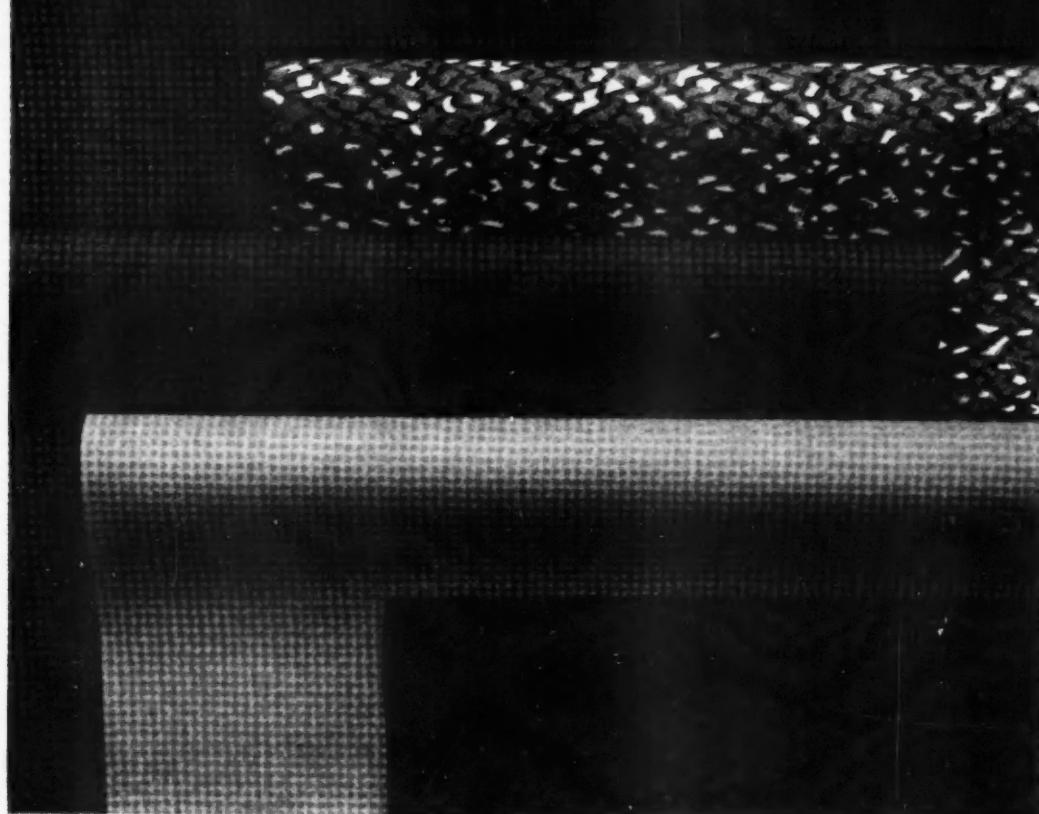
From its beginnings as 'leathercloth' the chief advance in coated fabrics has been in the use of PVC rather than nitro-cellulose, as a coating material. While nitro-cellulose is still used for coated fabrics of lighter weight for other covering purposes, PVC is now the standard coating for this type of upholstery material. The result is a harder wearing fabric capable of taking a deep emboss if required.

A further development has been the introduction of 'breathable' coated fabrics. These are permeable to air, so that cushions and soft upholstery can be made without the use of air eyelets; the material is also comfortable to sit on and easy to handle.

Coated fabrics are colder to the touch than leather, but from most other standpoints today's PVC coated fabrics can offer an excellent and much cheaper alternative. However, there is still much scope for improvement in the design of these materials. Good ranges in plain colour exist and are obviously essential. But in passing from direct imitation of leather, producers have been obsessed by the prospects of colour and emboss imitations of fabric textures. Recently some interesting effects without direct affinity to either leather or other coverings have been produced. There can be no doubt that coated fabric production is at the adult stage when it can create its own tradition in design.

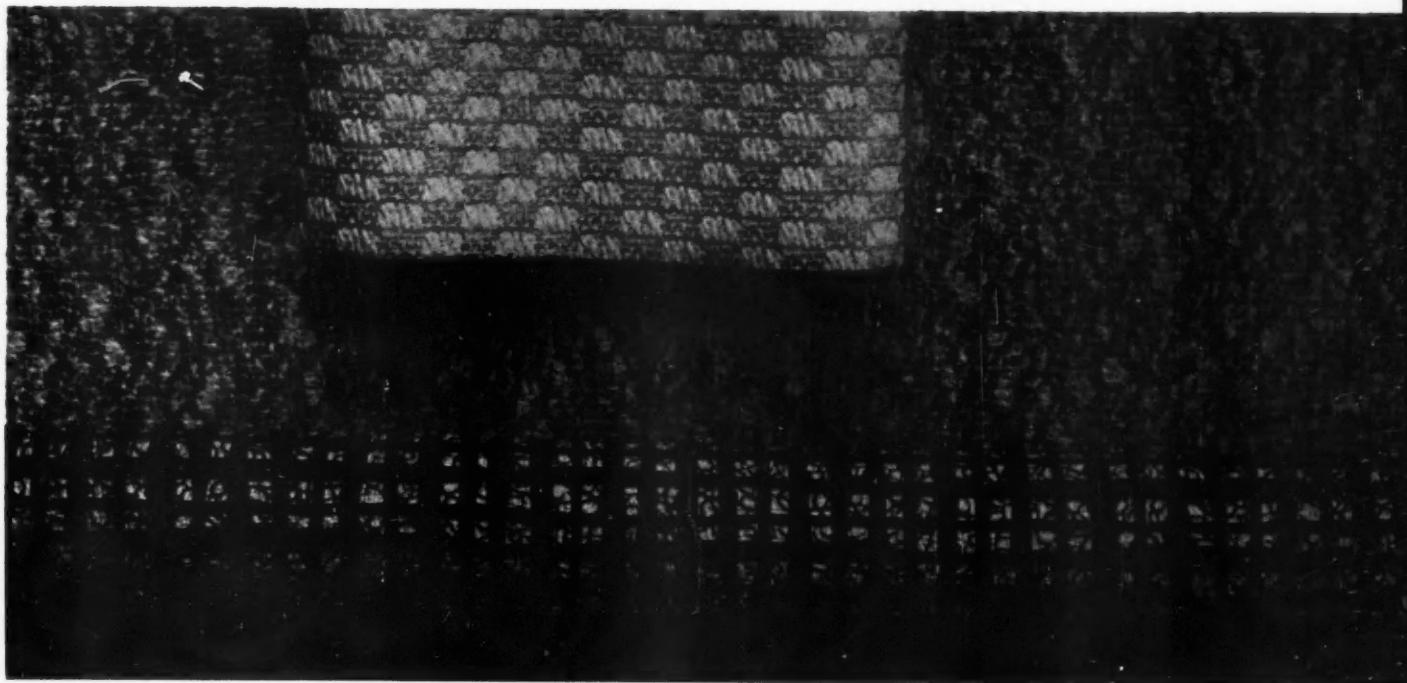
Through their subtle simulation of weave effects, these Texturide coated fabrics provide a restrained and acceptable background pattern. *Osaka Grass*, top, and *Madagascar*, bottom, are both available in excellent colour ranges. DESIGNER *Madagascar Tibor Reich*. MAKER *Arlington Plastics Development Ltd.*





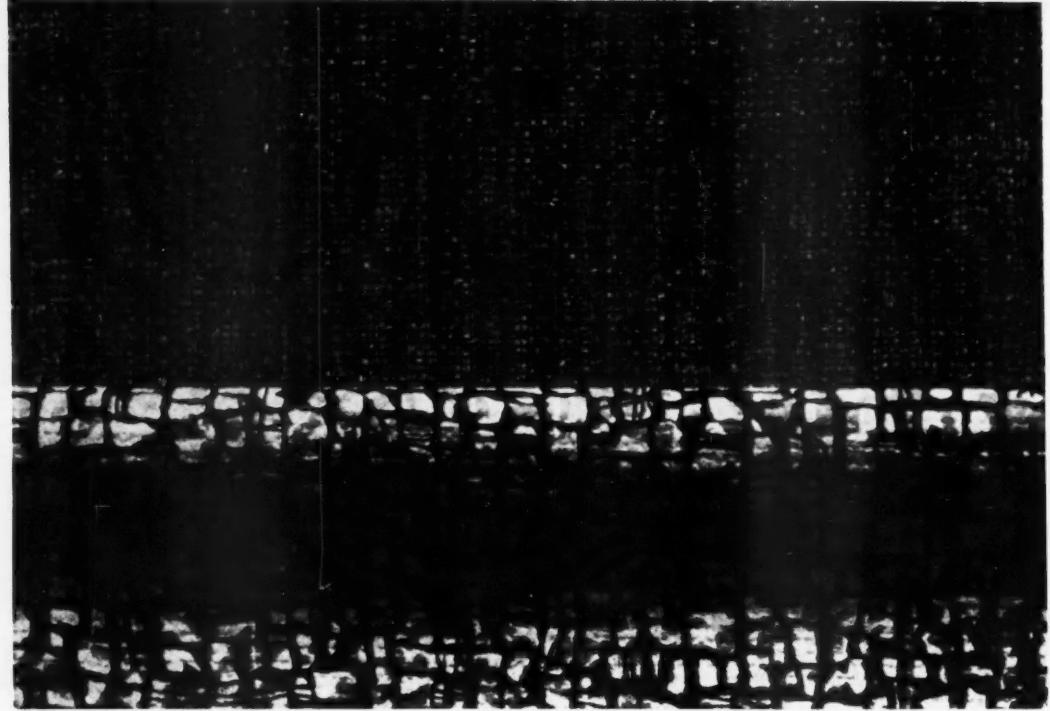
Two approaches to pattern in Lionide PVC coated fabric. The tweed design has a clear textile inspiration. The other fabric is particularly interesting since it has no obvious derivative basis.

DESIGNER (*the non-tweed effect*) Arthur S. Waterhouse. MAKER Jas. Williamson & Son Ltd. 12s 6d–18s 6d per yd (50 inches wide).

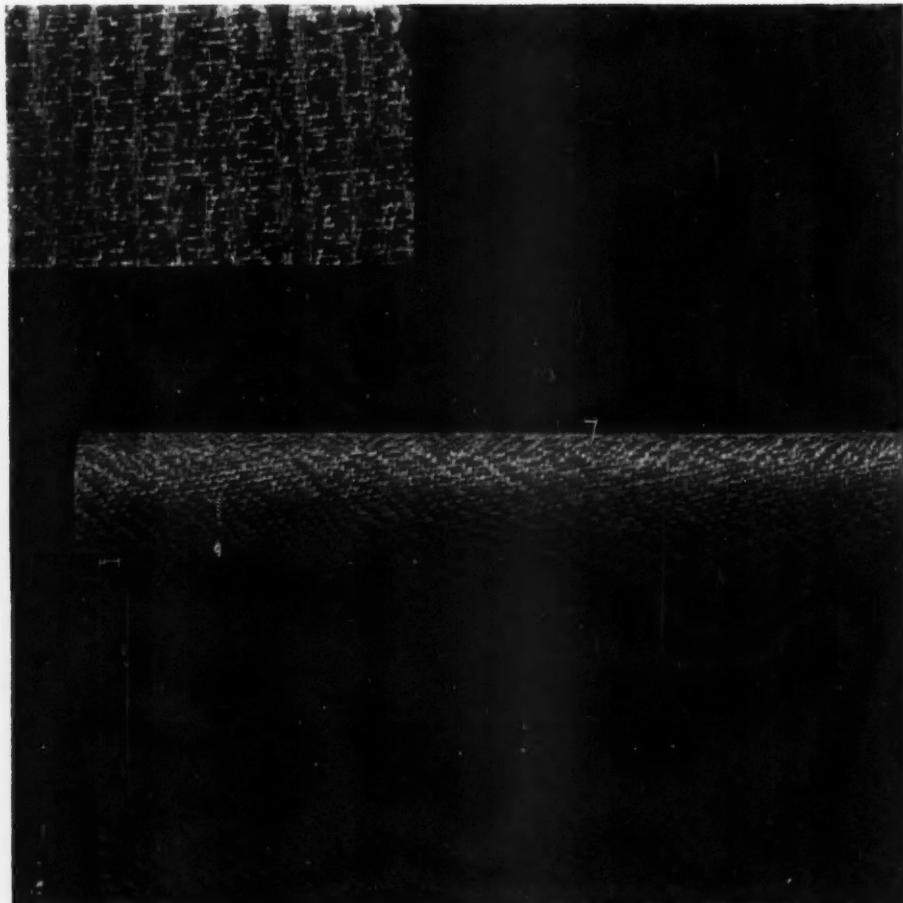


Vynair (superimposed, top) is a permeable PVC coated fabric; the 'breathable' nature of this material gives it several advantages in use. The other two patterns in Vynide provide textural effects in good colour ranges. MAKER ICI (Hyde) Ltd. Vynair from 16s 6d per yd (50 inches wide); Vynide from 14s 6d per yd (50 inches wide).

*continued*



These patterns on plastics coated fabrics are reminiscent of textures produced by other media - yet they retain a character of their own. MAKER *Storey Bros & Co Ltd.* Top, Design 50 (in four colourways); bottom, Design 5 (in six colourways). 12s-14s per yd (50 inches wide).



Duracour is an interesting and inexpensive upholstery material woven from spun rayon warp and continuous filament rayon weft which is then resin impregnated in fabric form. The material is very smooth, having no loose fibre on its surface and may be sponged down. It is capable of being heat set. The colours are 'dope dyed' ensuring outstanding fastness to rubbing and cleaning, and a high standard of fastness to light.

A considerable range of colours and patterns is available, but it must be acknowledged that any such ringing of changes does not alter the basic character and texture of the fabric. DESIGNER *Eric Gilboy, MAKER Samuel Courtauld and Co Ltd.* 14s 11d per yd (48 inches wide).

## textile coverings

### SMOOTH SURFACED FABRICS

The continuous search for new ideas in covering fabrics and some natural reaction to the popularity of heavy textures has led to increased experiment in the development of smooth-surfaced fabrics. Generally this type of fabric is easier to clean than rougher textures. On the other hand, grease marks may show badly, particularly on corners and turned edges, especially if the face of the cloth is not in wool. Following the influence of Scandinavian designs, wool face cloths have been more widely used recently, and there is a growing demand for the expensive but very durable fabrics that make use of nylon.

### HEAVY TEXTURED WEAVES

The heavy textured weave, probably using two or more colours, has become almost synonymous with modern upholstered furniture. By the use of heavy counts and particularly of fancy yarns, it has been possible to achieve the random effect of casual patterning that characterises today's designs, just as highly organised pattern was characteristic of the William Morris era. There are one or two practical points which should be made about the use in upholstery of such fabrics. First, the fabric should be substantial enough to ensure reasonable wear. Second, in light and in very dark rich colours soiling may become a problem if a considerable percentage of wool is not used on the surface of the fabric. Third, the fabric should either be seamed before being upholstered or at any rate be

generously turned under as it is fixed.

With these precautions observed the complaints which have gone some way to damage the reputation of this type of fabric would not have arisen.

### PILE FABRICS

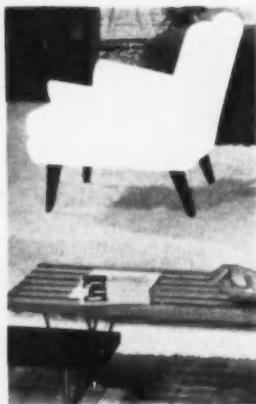
Moquette, velvet, velveteen, plush and corduroy are all pile fabrics that are used in upholstery. By far the most important of these is moquette. The pile may be cut or looped (uncut), and many qualities are produced that use both methods in one fabric. The heavier qualities for use in public transport generally include cut pile. Uncut moquettes are more usual for domestic furniture.

All fabrics fluctuate in popular approval. Moquette has undoubtedly suffered from the uninspired designs which have long been associated with it; this is all the more frustrating, from the British producer's point of view, as the worst fabrics and many of the worst designs have been on cheap cotton moquettes imported from the Continent. Moquette has many advantages if it is in a reasonable quality, and has a wool pile. Pile constructions make the utmost use of the natural resilience of the wool fibre. As a result wool moquettes, or good blends with wool, should wear well and will stay clean looking. And, of course, colours on wool can be excellent.

The basic structure of moquette sets limitations on design, but good ranges, restrained in colour and pattern, have been available from British firms for several years.

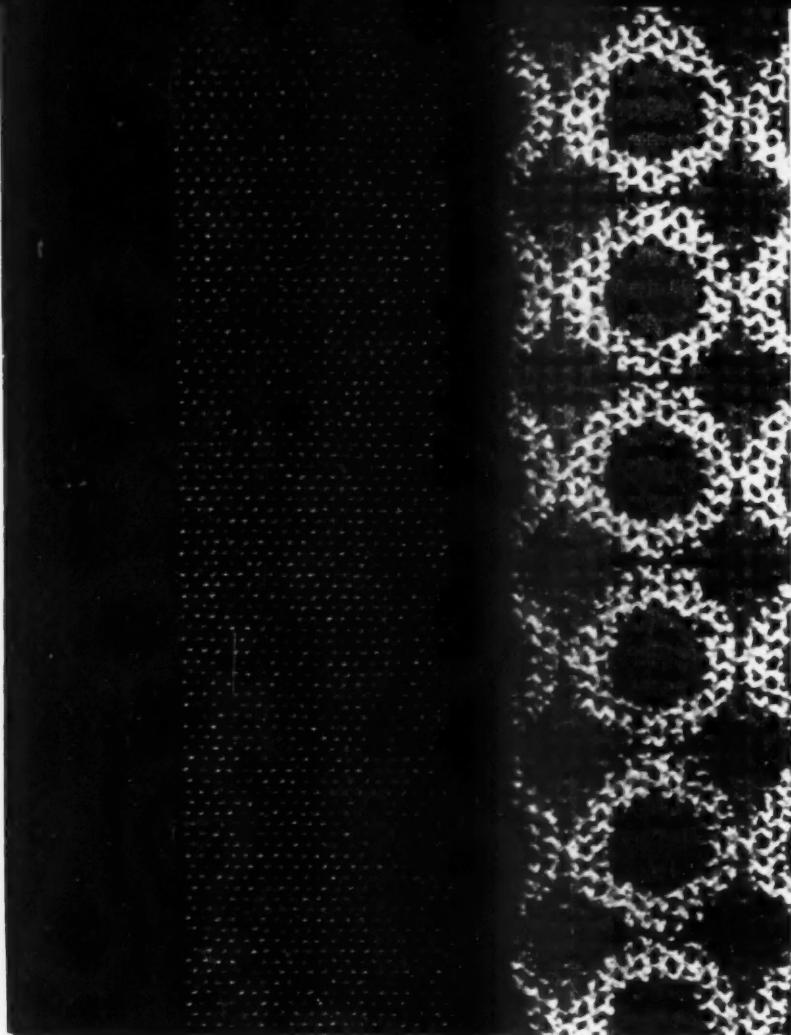
Left, a fine ribbed wool moquette, a fabric confined to The Cintique Chair Co; and right, a patterned and a plain version (Ashurst and Anfield) of a good quality wool faced tapestry.  
DESIGNERS Lister Design Studio. MAKER  
Lister & Co Ltd. Ashurst and Anfield  
£1 5s per yd (50 inches wide).



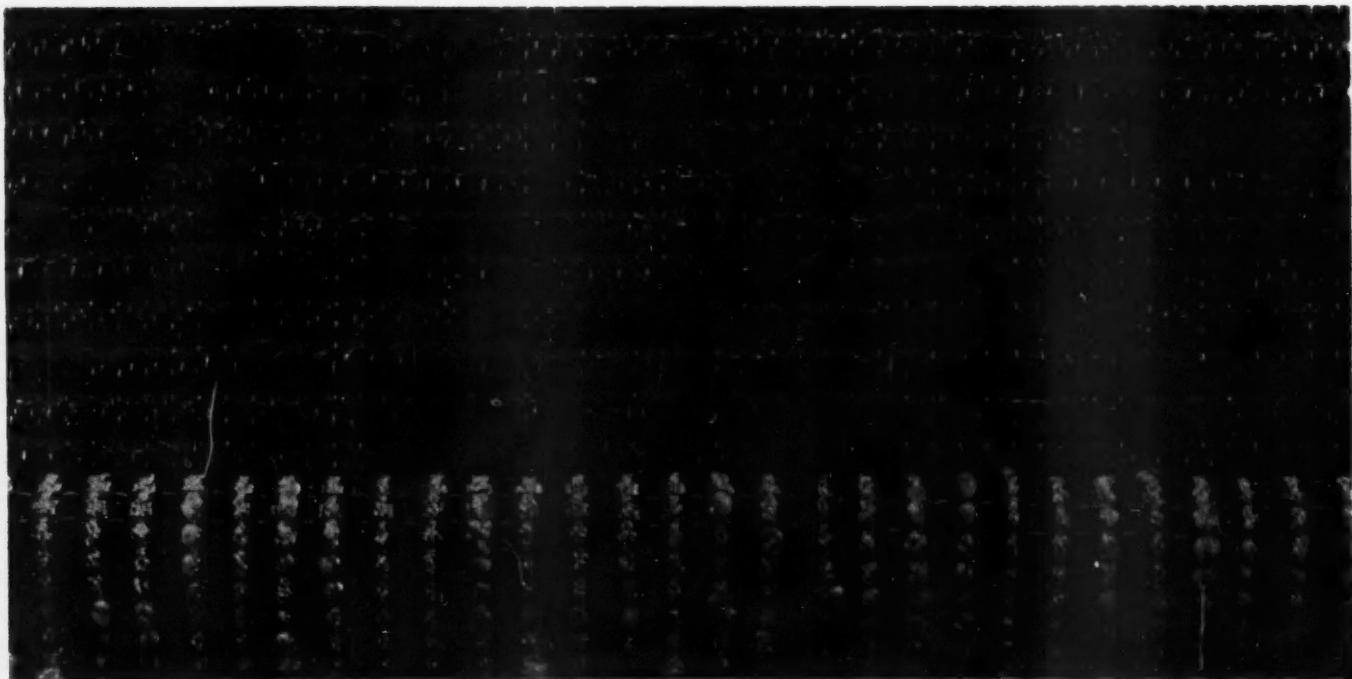


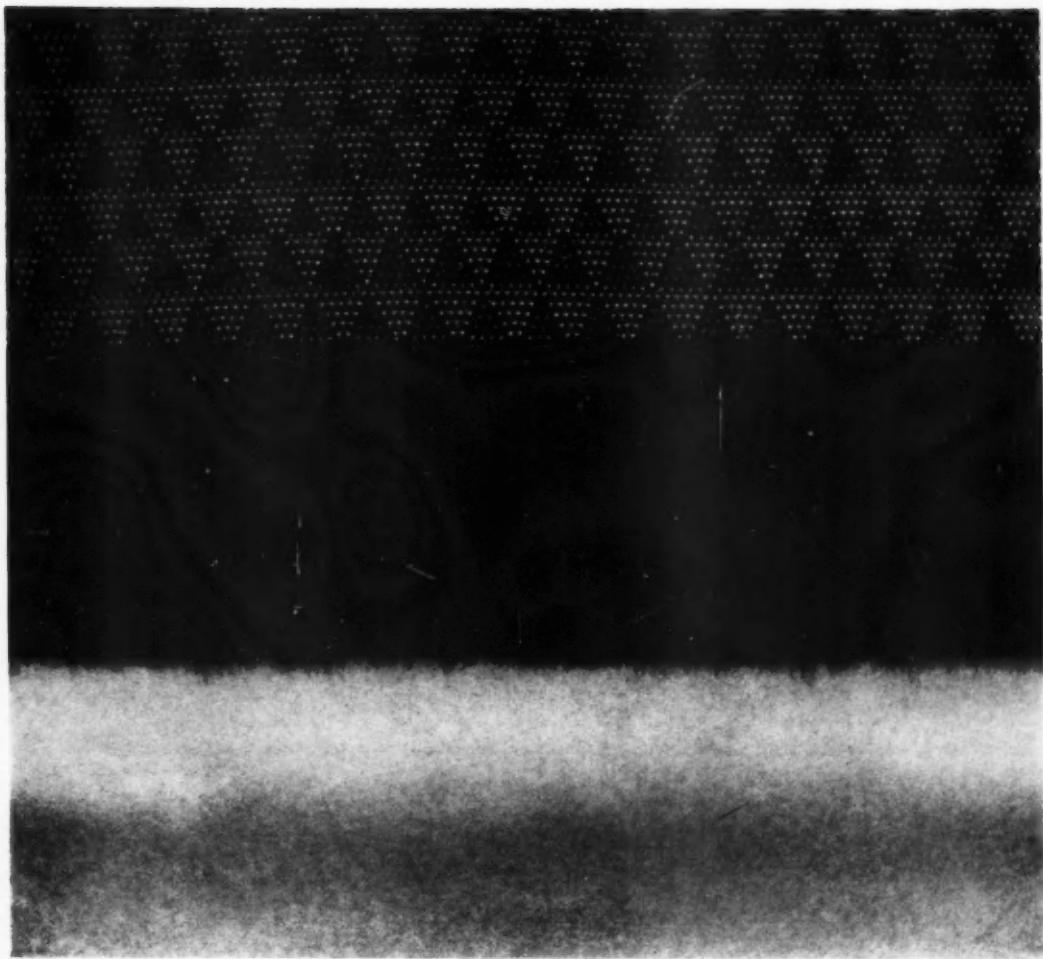
textile coverings continued

Right *Majorca*, an interesting design which almost looks as though it might have been embroidered, and left *Braemore*, one of the checked fabrics for which this firm is well known; this design is in a linen and rayon construction. MAKER Donald Brothers Ltd. Majorca £2 13s per yd (50 inches wide); Braemore £2 6s per yd (50 inches wide).

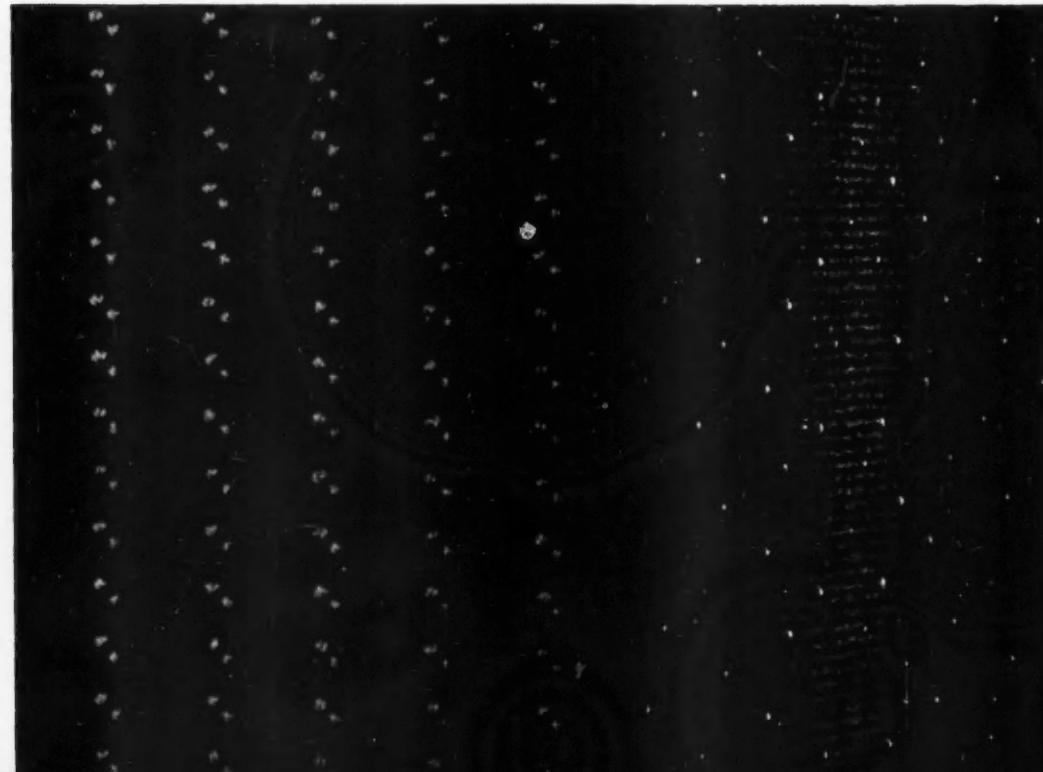


A heavy cotton fabric (225 A563) shows the interesting random effects that can be obtained through the use of fancy yarns. MAKER Spectrum Fabrics Ltd. £1 11s 6d per yd (50 inches wide).





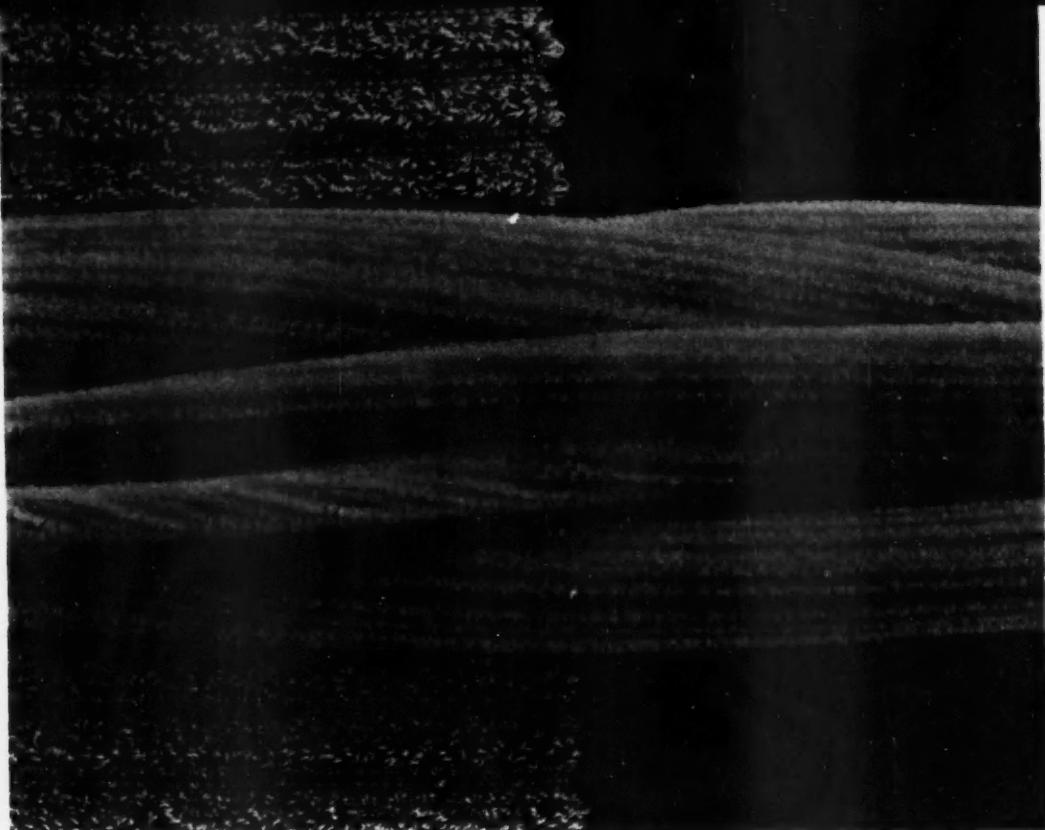
An indication of the range of effects possible in nylon upholstery. The top fabric has the smooth lustrous surface that might reasonably be expected from continuous filament nylon. The second fabric uses Ban-Ion textured yarn, and the bottom fabric is a nylon fur. MAKERS Top Ashton Bros & Co Ltd. £2 per yd (54 inches wide); Centre Simpson & Godlee Ltd. £2 6s 9d per yd (48 inches wide). Bottom Alfred Morris Furnishings Ltd. £3 per yd (48 inches wide).



Two wool moquettes of a very different character. Deepex, left, demonstrates the textural variety that can be achieved in moquette weaving. Fiesta, right, a fabric confined to Parker Knoll Ltd, has a pile of even height relieved by the sparkle of specks of Lurex. DESIGNER Isaac Jennings. MAKER John Holdsworth & Co Ltd. Deepex £1 5s per yd; Fiesta £1 10s per yd. (50 inches wide).

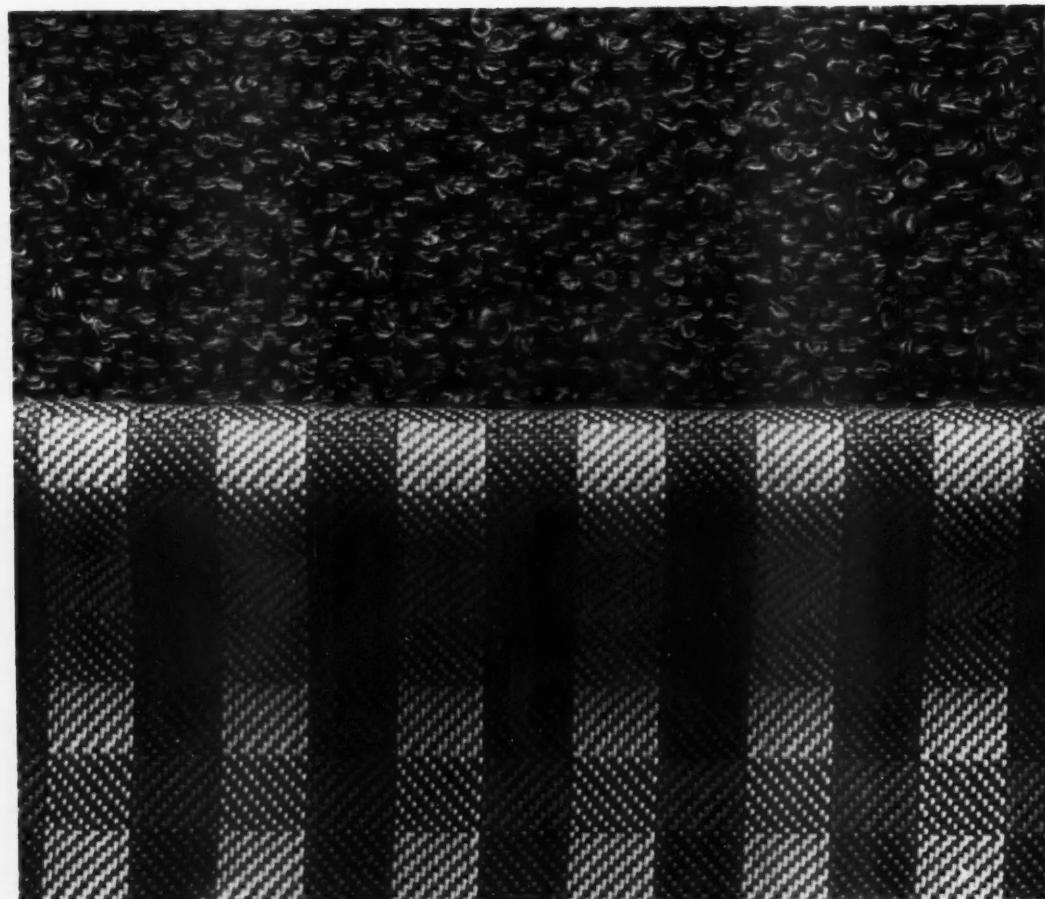
*continued*

Two approaches to pile fabrics. In the background two colourways of *Tweedsmuir* - an uncut moquette in wool pile reinforced with nylon. Superimposed, *Miniver*, an interesting worsted and mohair upholstery velvet. MAKER *T. F. Firth & Sons Ltd.* *Tweedsmuir £1 18s per yd (48 inches wide); Miniver £2 5s per yd (48 inches wide).*



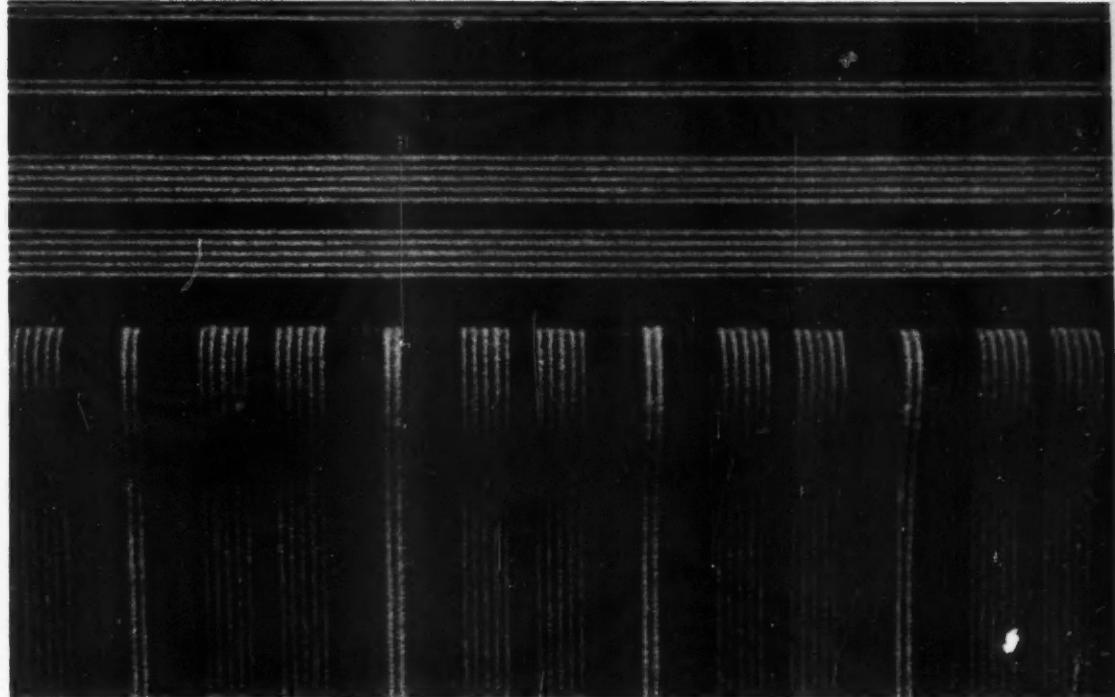
*textile coverings continued*

*Chair by W. G. Evans & Son Ltd*

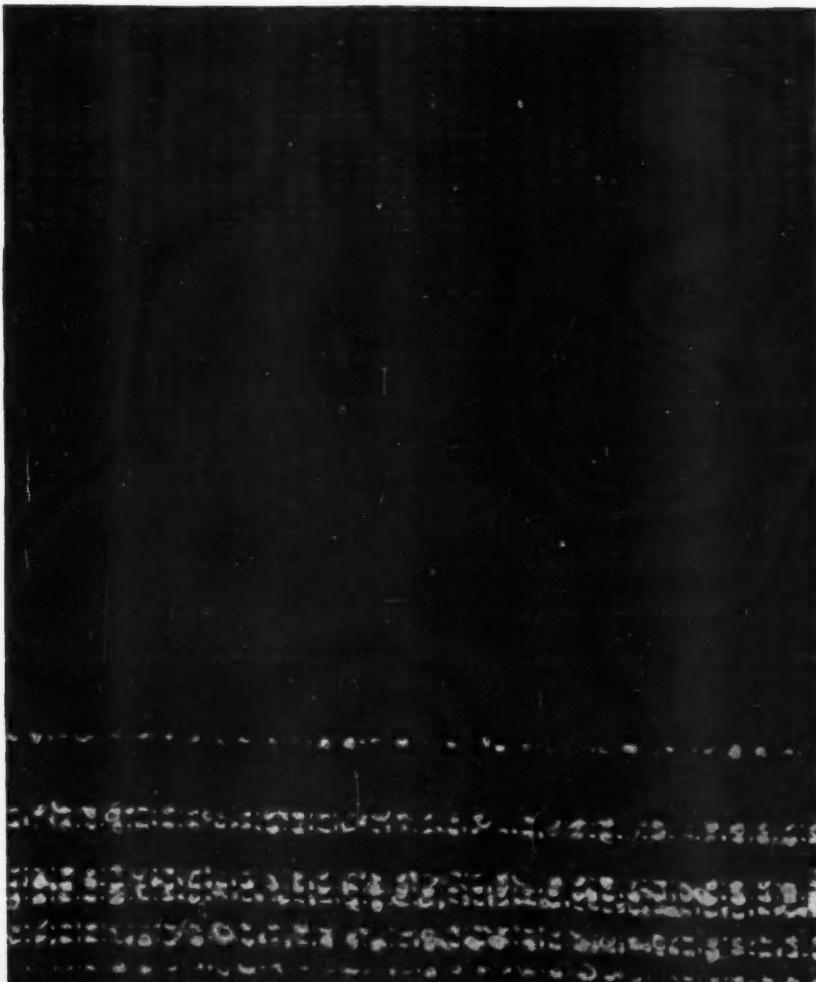


Top, *Berwick* texture weave, a cotton and rayon covering of interesting structure, and bottom, an example of *Tygan*. *Tygan* is made from the tough synthetic Saran. The material is very smooth and strong. It can be heat sealed and is non-water absorbent. Some good colour and weave effects are available, but *Tygan* seems to have found more applications as deck chair material than for tight upholstery. MAKER *Fothergill & Harvey Ltd.* Top 17s 6d per yd (48 inches wide); bottom £1 1s 6d (52-54 inches wide).

*Replin* is an extremely hard wearing worsted faced material with a vertical cord. Its principal use is in high class contract work - ships, hotels, etc. An excellent colour range is also available in plain dyed material. DESIGNER James Ashworth. MAKER British Replin Ltd. £2 12s 6d per yd (50 inches wide).



Three high grade covering fabrics, the top one a wool mixture, the other two mainly worsted mixed with some cotton and rayon. The controlled patterns of the top two fabrics contrast with the random character of the third fabric. DESIGNER S. D. Goerner. MAKER Margo Fabrics Ltd. Top, MT 3009 168 £1 9s per yd; centre MT 4051 414 £1 16s per yd; bottom, MT 3072 319 £2 17s per yd (all 48-50 inches wide).

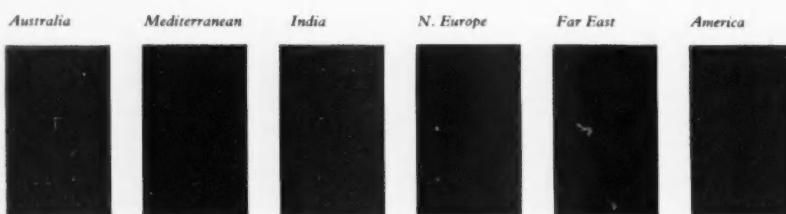
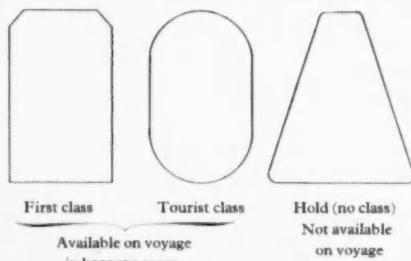


**Prices** To enable price comparisons to be made, an indication of retail prices is given where possible. Due to methods of distribution - upholstery producer to wholesaler to furniture manufacturer - it will sometimes happen that supplies of the materials illustrated are not available over the retail counter.

# LABELS

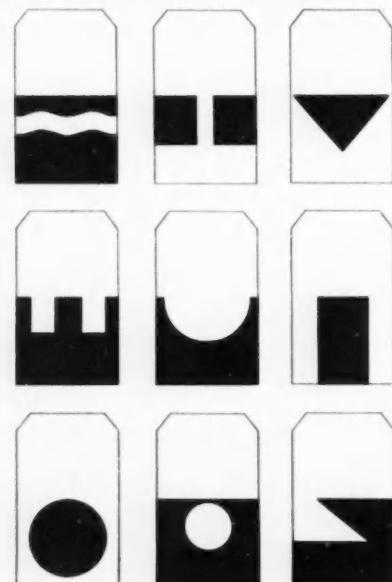
*skilful coding identifies destination*

1 The three basic shapes of label representing the classes of luggage.



2 The six colours denoting regions visited by ships of the P & O and Orient Line companies.

3 The nine patterns each representing individual ports within the regions. Each of these patterns printed in, say, mauve, denotes a different port in the Far Eastern region. Printed in brown, they each denote a different port in the Mediterranean, and so on.



The illustrations on these two pages show a remarkable range of baggage labels that have been designed by Jock Kinneir, assisted by Margaret Calvert, for the P & O and Orient Line companies. The designer, who was chosen as a result of recommendations by the CoID Record of Designers, was faced with the problem of providing a means for quick identification for porters and others handling baggage particularly in Eastern and Far Eastern ports. His solution was to produce a system of colour and pattern coding which is explained in the illustrations, LEFT. Altogether this provides 162 possible permutations, though of these only 107 are actually required at present. In addition there are several special labels including a cabin label which is issued to all passengers. This has two overlapping circles symbolising the joint operations of the two companies.

Basically, the scheme will work in this way: when a ship arrives at a port where a number of passengers are to disembark, the porters, who are often illiterate, will be able to collect all the baggage with labels of a particular colour and pattern without the need to read the name of the port. Two further points deserve special commendation - first, the way in which the labels hang so that detailed information can be read without turning them on their side; and second, the immaculate typographic design which makes the series one of the most distinguished ever produced.

**Baggage room**

Available during voyage

**1**

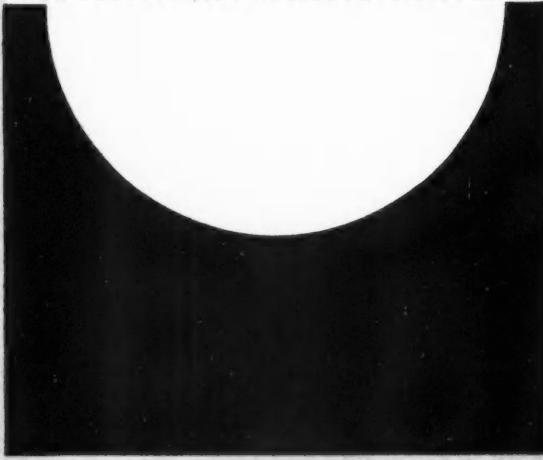
**SS**

Name in block letters

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P & O \* ORIENT LINE \* ORIENT & PACIFIC LINES



**Baggage room**

Available during voyage

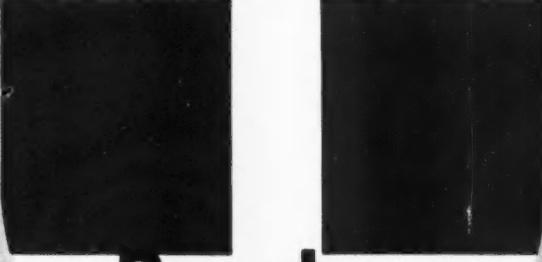
**T**

Destination address

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P & O \* ORIENT LINE \* ORIENT & PACIFIC LINES



**Bombay**

**Hold**

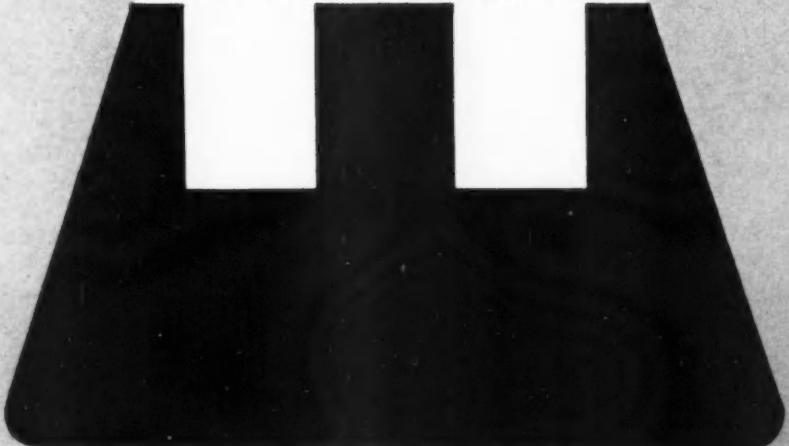
Not available during voyage

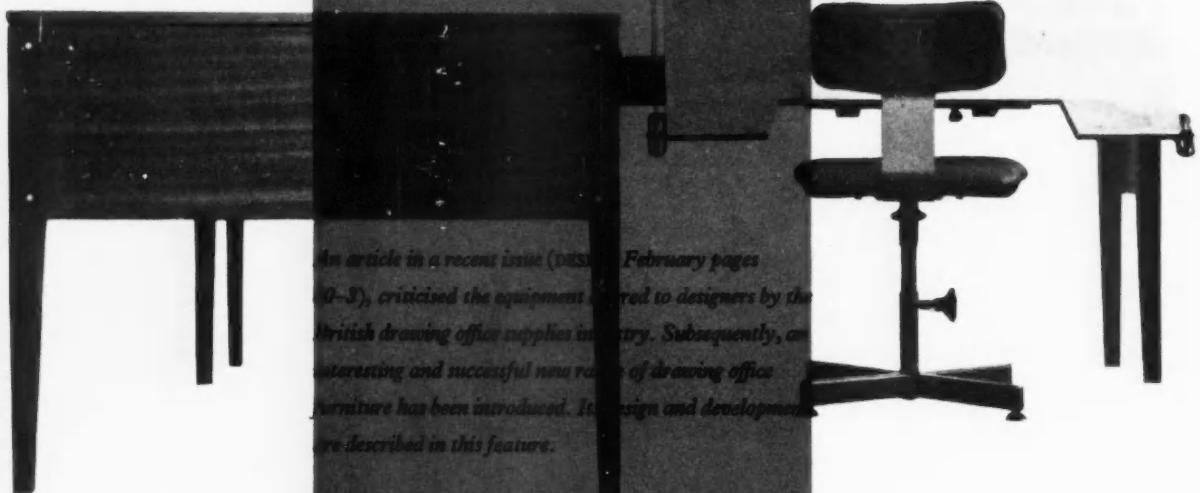
Destination address

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P & O \* ORIENT LINE \* ORIENT & PACIFIC LINES





*An article in a recent issue (DESIGN February pages 4-5), criticised the equipment offered to designers by the British drawing office supplies industry. Subsequently, an interesting and successful new range of drawing office furniture has been introduced. Its design and development are described in this feature.*

## Fit for designers

It is so rare to find an industrial designer involved in a range of drawing office equipment that this would be news in itself. However, in the case of the 28 range of drawing office furniture recently launched by Hall Harding Ltd the news is two-fold. It has been designed by industrial designers and it is based on anatomical principles.

This venture was prompted by the Hall Harding directors, who recognised that drawing boards and stands were becoming more elaborate and expensive without any obvious benefits to either draughtsman or productivity. It was felt that the key to drawing office furniture design lay in using anatomically correct seating as the starting point rather than an ingeniously contrived drawing stand. A design programme based on this assumption was put in hand in January 1958. The chief responsibility for seeing the project through fell to Richard Harding, great-grandson of one of the founders, and at 28 the newest and youngest director.

Anatomical research for the design of the chair was carried out in collaboration with the medical adviser to a very large scale employer of designers and draughtsmen. His findings proved to conform closely to those

published by Dr Bengt Åkerblom, the Swedish physiologist. One notable recommendation which cut across conventional ideas was the establishment of 16½ inches as the average seat height, as against 27 or 30 inches for the traditional high stool. The BSI recommendations\*, which were published several months after the decision was made, set out the same general recommendations, but with 17 inches as the average seat height.

The Hall Harding chair was designed by Ian Hodgson of R. D. Russell & Partners. In addition to the ergonomic approach, the designer's brief required him to aim for an appearance which was modern without being so fashionable that it would soon become dated. Such a brief inhibits strikingly original lines. The result is a design which is outstandingly efficient and which expresses efficiency, but which is not exactly handsome. Most of the detailing is unobtrusive and professional, except perhaps for the height locking knob which is heavy and sharp-edged at the shank end.

With the design of the chair established, the evolution of new working dimensions for the rest of the equip-

\*BS 3079 : 1959 Anthropometric recommendations for dimensions of non-adjustable office chairs, desks and tables, 4s (DESIGN May page 63).



A complete work station; the chair (which may be plain or upholstered) is 16½ inches high with adjustment of 1½ inches up and down. The seat is extra wide, the back rest of fixed height and angle but resiliently mounted.

The mobile instrument locker stows beneath the reference table when not in use. It has a black Formica top, an instrument drawer with divided tray, and a let-down locker front.

The basic reference table is flush edged and has deep stretchers for structural rigidity. There is a shallow plan drawer which can be full length, and ample knee-room. An instrument drawer may be added at any position along the stretcher.

ment followed naturally. The height of the reference tables was fixed at the BS height - 28 inches - another revolution in drawing office equipment practice which Hall Harding has boldly decided to press home by using 28 as the brand symbol. The remainder of the furniture - that is to say, everything but the chair and the drawing board - was designed by Richard Hornby, who had been concerned with the project from its inception. The result is impressive. The range consists of 12 different units which can be bolted together to form a variety of layouts. (A complete work station including chair, with counterpoised adjustable drawing board and parallel motion straight-edge would cost about £100.) Proportions were proscribed and the detailing had necessarily to be simple. Only the choice of materials and finishes gave scope for the application of direct aesthetic judgment. The main impact of the design could only revolve about the satisfaction given by a product which fulfils its function with economy of means and simplicity of line. Using African hardwood, sapele and utile with a natural matt finish, sycamore dowels and brass eyelets (for extension fittings) Mr Hornby has succeeded in this exacting aesthetic exercise.



**European trade**

## Furnishing fabrics

"You British seem to be pre-occupied with pattern." This comment from a Swiss designer about a British showhouse at an international exhibition in Sweden several years ago was intended as a criticism, but it pointed to the emergence of a recognisable element in British design which was perhaps less obvious to ourselves than to those outside. In the intervening years we seem to have turned what was clearly considered to be a handicap into a positive asset, for it is in the decorative industries - wallpapers, textiles, carpets - more than any other that Britain has made her mark in the international scene. In more recent displays of textiles from different countries, the best of British printed and woven designs have stood out from their rivals for the imaginative breadth of their ideas and for the evidence of constant experiment with the technical processes available.

This achievement certainly gives cause for self-congratulation but not for complacency. While British designers have been moving towards bigger, bolder and freer effects, the rest of Europe has not been standing still. This survey shows some of the leading trends on the Continent which reveal recent developments of native traditions, but also suggest that the free interpretations of natural forms, which characterise the British achievement, have had a widespread influence on European design. The need for constant exploration of new approaches therefore remains if Britain is to maintain the individuality in design which has ensured a growing reputation abroad. Unfortunately, this success is confined to a small section of the industry leaving a line of dull, conventional work trailing sadly behind.

The term 'modern' is in many ways more difficult to apply to textiles than most other products. There are designs which could be described as modern, as distinct from traditional, which nevertheless seem out-of-date. Others which have traditional qualities would look magnificent in the most modern of settings. Fashion has much to do with it, and so of course does colour, the quality of drawing, originality and so on. There is such a diversity of approach that fundamentally the critic (and, one hopes, the user) is less concerned with distinguishing the modern from the traditional, than the good from the bad. The influence on current developments of craft weaving and printing before the war is not always recognised and is perhaps one reason for the absence of a style which is distinctly modern. The roughness of texture and the 'accidental' qualities of craft designs enjoy a popularity today that is not accorded to the more sophisticated fabrics such as brocade. Many of the more interesting weave effects have evolved from experiments on the hand loom while the hand silk screen process has enabled subtleties of drawing and colour to be achieved which have since

been interpreted in machine printed designs, which suggests that these methods are fundamental in developing new effects. It is not surprising therefore that the countries in Europe which have a strong arts and crafts tradition produce some of the more original and exciting work. France, surprisingly enough, seems to have little to offer within this broadly modern idiom.

Sweden, whose severe but restrained geometric designs have been strongly associated with her post-war production, is now producing a variety of printed floral designs of great charm, but with an underlying formality which distinguishes them from comparable British work. But in woven fabrics, throughout the Scandinavian countries, figurative designs hardly occur at all. Nevertheless a surprising variety is achieved within what might be described as a basically structural approach. On the one extreme, the broad rectangular designs of Sarpenava in Finland achieve an originality which is due to their extreme simplicity, their enormous scale, and above all to their subtle harmonies of colour. Elsewhere - in Norway and Denmark for example - much skill is devoted to the production of open weave designs in flax or to simple dobby woven fabrics in wool that are tasteful, restrained, extremely pleasant to live with, but often impersonal, so that one is seldom tempted to say "that is the one I want".

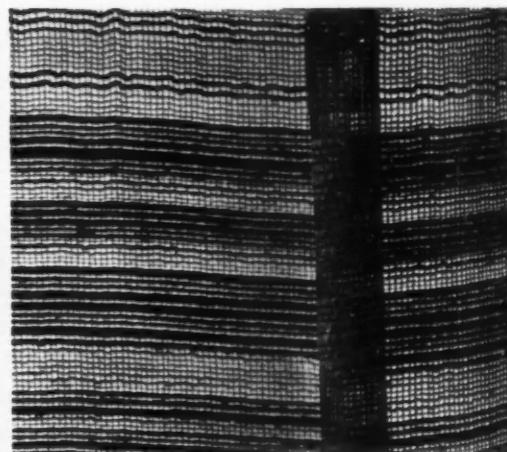
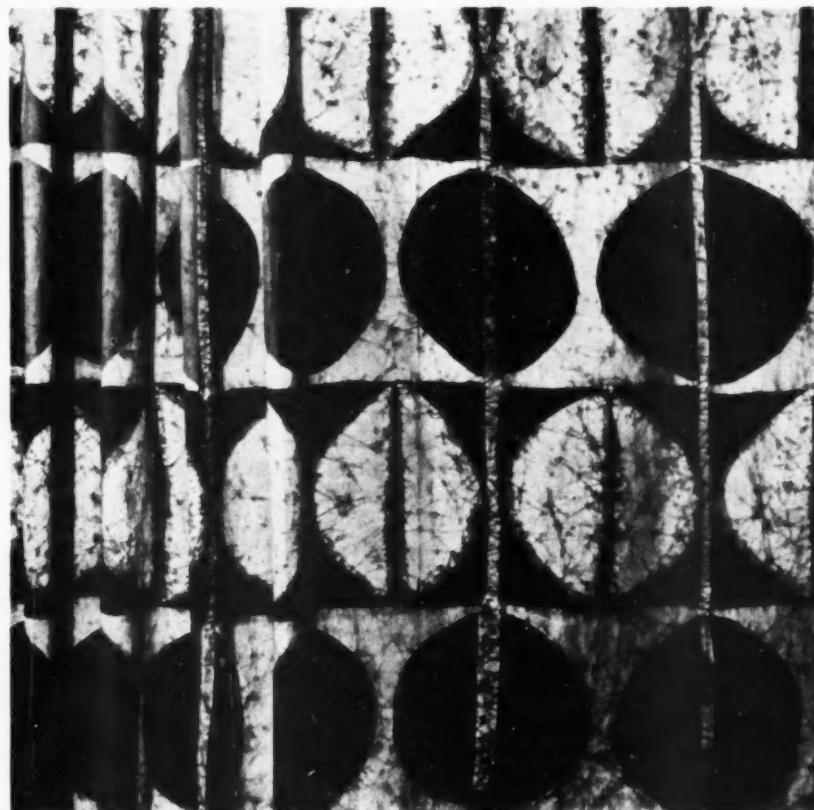
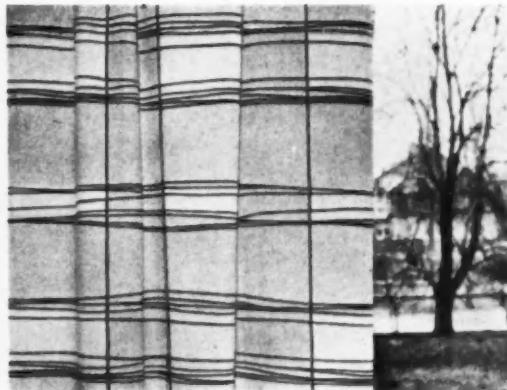
In Germany the craft tradition seems almost non-existent. This is the one country whose furnishing textiles proclaim themselves as being unequivocally modern. Much of the severe functionalism of the Bauhaus survives in designs which are now larger, much more bold but essentially within the spirit that guided the aesthetic revolution of the 'twenties. Such staunch adherence to a single ideal makes one realise that the Bauhaus could have occurred only in Germany; had it not occurred there it is doubtful if the Modern Movement would have had such a positive beginning.

The Italian fabrics shown in the article illustrate this point. Their leaning towards the Baroque richness of Italy's past is a trend apparent also in much of her furniture, that barely acknowledges the disciplines that have grown from the Bauhaus idea. The social stimulus for modern industrial design - the ideal of producing good design for mass markets - has come near to fulfilment in Scandinavia and Germany and is reflected in the simplicity of their designs. In Italy some of the more interesting fabrics seem to be aimed at a limited connoisseur's market, expressed by a technical virtuosity in printing sometimes with as many as 20 different colours. The effects produced are often unusual, sometimes exciting, but always expensive.



*Germany. Brüssel* screen printed design on cotton. Four colourways. 49 inches wide. DESIGNER Professor Margret Hildebrand. MAKER Stuttgarter Gardinenfabrik GMBH.

*Below Germany. Vinon* screen printed design on cotton. Six colourways. 49 inches wide. DESIGNER Professor Margret Hildebrand. MAKER Stuttgarter Gardinenfabrik GMBH.



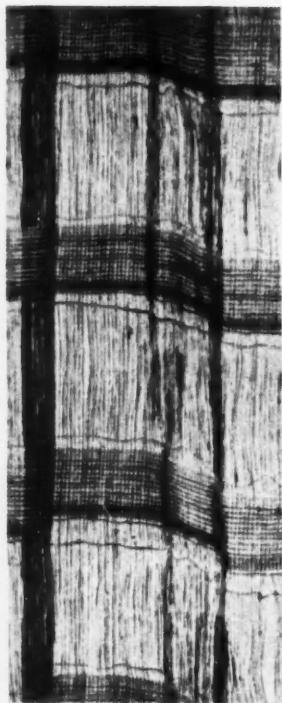
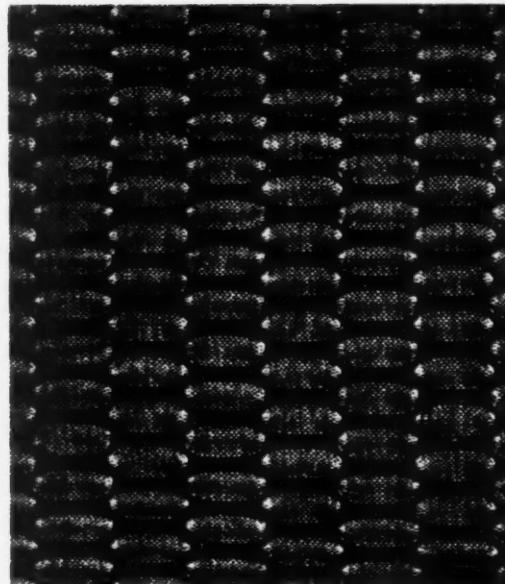
*Above Switzerland. Linen net curtain* fabric. 59 inches wide. MAKER Baumann & Co. Sfr 12 per metre.

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*Switzerland. Hand painted design on* cotton. 51 inches wide. DESIGNER and MAKER Heidi Grieder. Sfr 60 per metre.

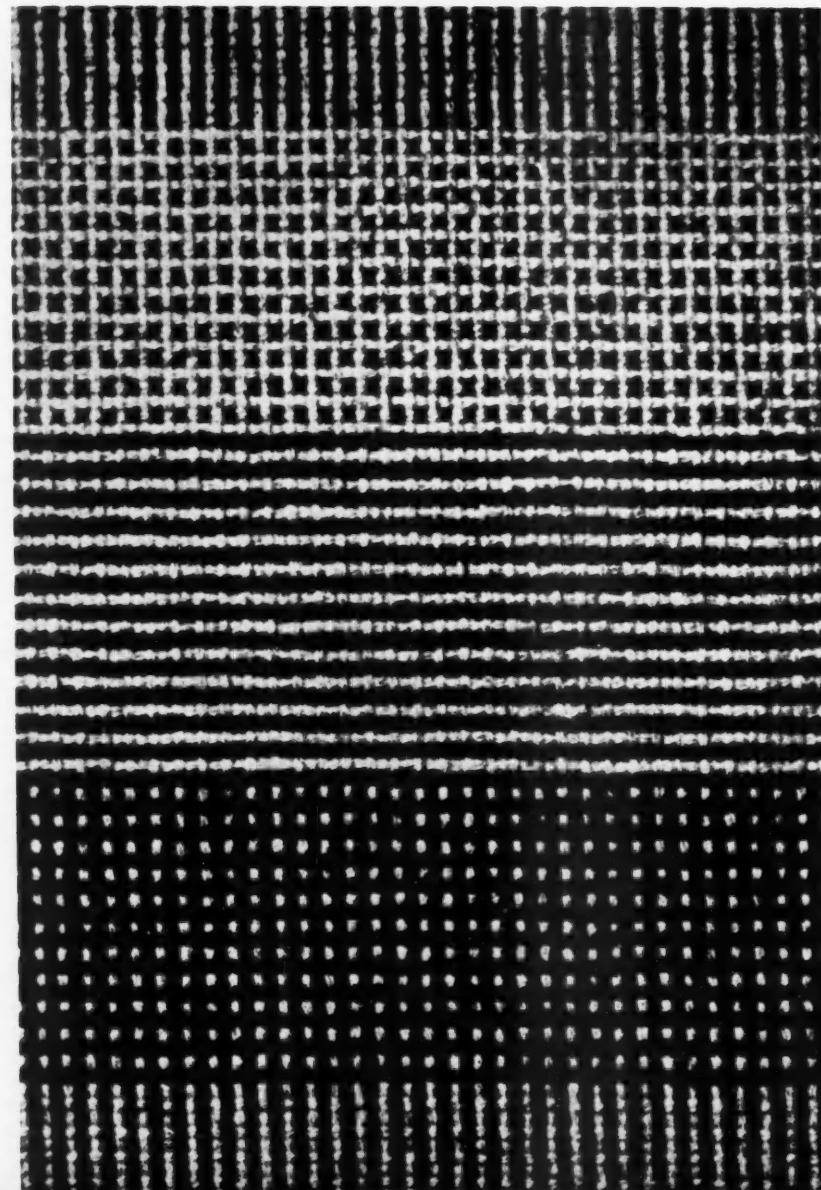


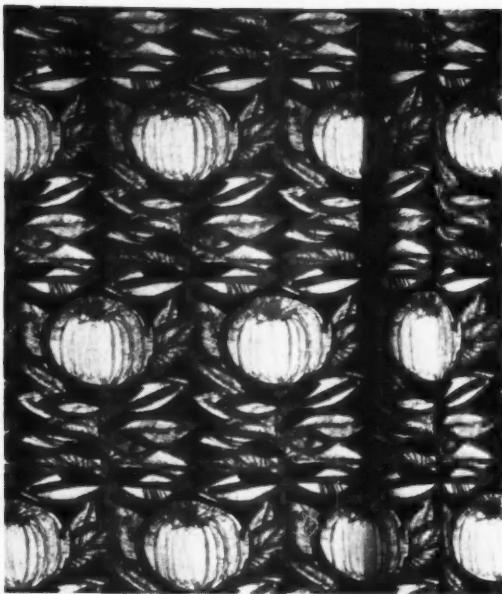
Denmark. Cinerama honeycomb weave fabric in cotton. Eight colourways. 55 inches wide. DESIGNER *Lisa Plum*. MAKER *Den Blaa Fabrik*. Dkr 41.50 per metre.



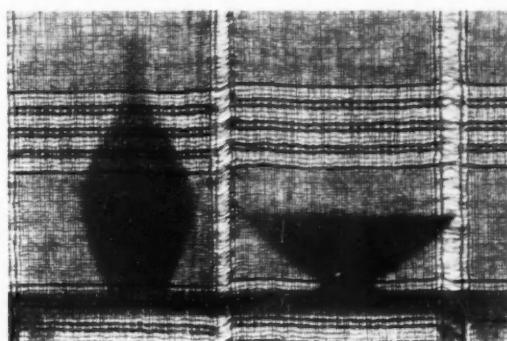
Denmark. Open weave curtain fabric in flax. 48 inches wide. DESIGNER *Børge Mogensen*. MAKER *C. Olesen A/S*. Dkr 19.05 per metre.

RIGHT Denmark. Woven upholstery fabric in black and white wool. 51 inches wide. DESIGNER *Gunnar Aagaard Andersen*. MAKER *Unika-Væv A/S*. Dkr 74 per metre.



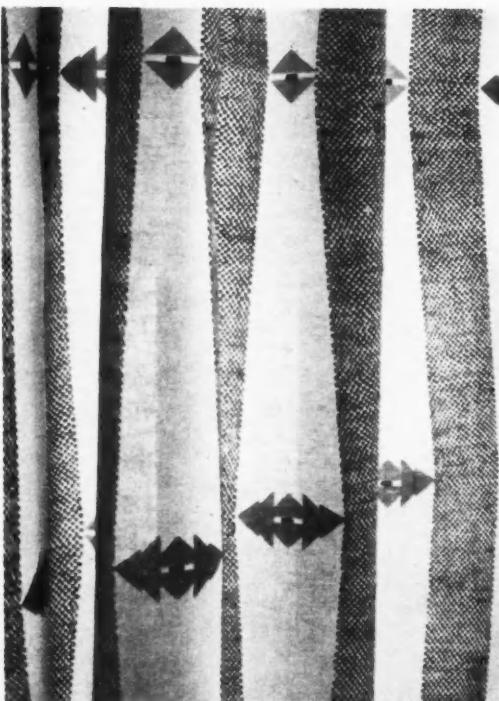


Sweden. *Curbita* screen printed design on sanforised cotton. Seven colourways. 51 inches wide. DESIGNER *Annika Malmstrom*. MAKER *Molnlycke Väveriaktiebolag*. Skr 15.50 per metre.



Norway. Open-weave fabric in wool. 51 inches wide. DESIGNER *Ole Ommeland*. MAKER *Sellgrens Vaeveri*. Nkr 20 per metre.

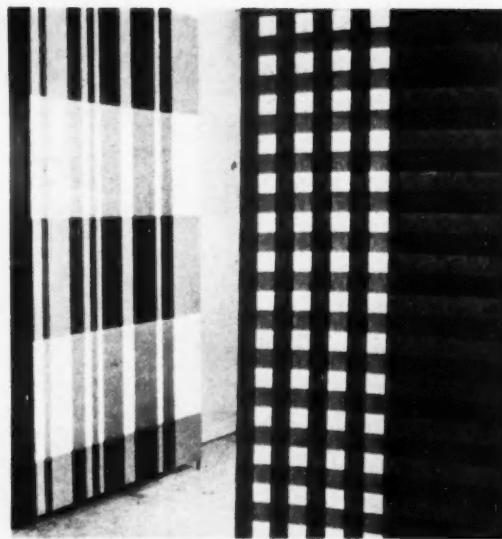
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Sweden *Rodeo* screen printed design on cotton. Three colourways. 52½ inches wide. DESIGNER *Astrid Sampe*. MAKER *NK's Textilkammare*. Skr 15 per metre.



RIGHT Sweden. *Betula* hand printed design on cotton. Three colourways. 52½ inches wide. DESIGNER *Viola Grästorp*. MAKER *NK's Textilkammare*. Skr 15 per metre.



*Finland.* Two woven designs in cotton. 60 inches wide. DESIGNER Timo Sarpaneva. MAKER Porin Puuvilla O. Y. BRITISH IMPORTER Conran Fabrics.



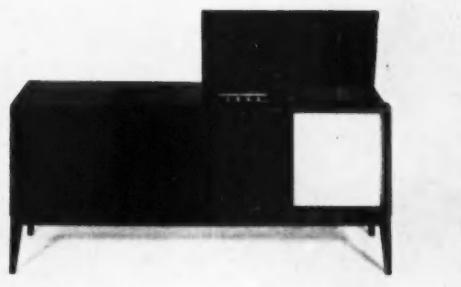
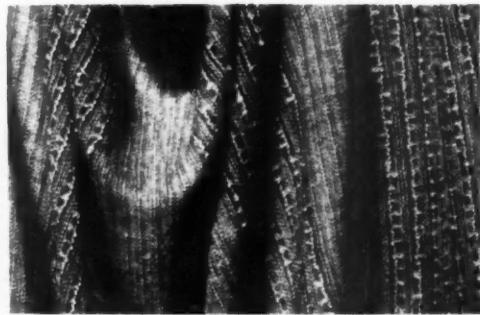
*ABOVE* Italy. *The Path in the Forest* screen printed on heavy cotton satin in 18 colours. 51 inches wide. DESIGNER Adriano di Spilimbergo. MAKER Manifattura Jsa. £ 2,400 per metre.

*Italy. Fleurs de Cannes* screen printed design on glazed cotton, satin or heavy wool. 51 inches wide. DESIGNER and MAKER Fede Cheti. £ 4,000 (glazed cotton); £ 5,000 (satin); £ 6,000 (wool); all per metre.



## DIRECTIONS

*A miscellany of new products and ideas from abroad*



### Canada: Design Awards 1959

The Canadian National Industrial Design Council has given awards for outstanding merit in design each year since 1953. This year 42 products were chosen by an independent panel from more than 400 entries submitted by manufacturers. Three of the award-winning designs are shown here. From LEFT TO RIGHT:

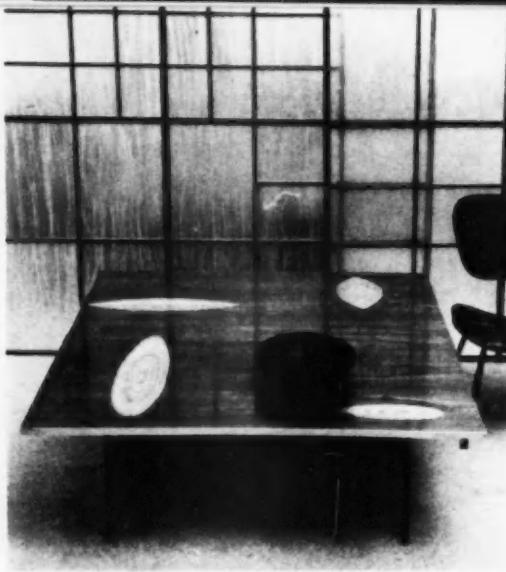
Chair with framework of black angle steel, available also as a settee.  
DESIGNER Court Noxon. MAKER Metalsmiths Co Ltd; Linen, cotton  
and mohair handwoven furnishing fabric. DESIGNER Velta Vilsons.  
MAKER Toronto Handweaving Studio; Hi-fi and stereo unit.  
MAKER Clairtone Sound Corp Ltd.



### U S A: robot dispenser

This automatic washing machine incorporates an unusual type of dispensing unit for washing powders and liquids. The *Dispensomat*, as it is called, consists of four bins: one for powdered detergent or bleach, which is dispensed at the beginning of the wash cycle; an alternative bin for liquid detergent if this is preferred; a bin for a water conditioning powder, which is dispensed at the beginning of the rinse period; and a bin for liquid fabric softener, 'bluing' or light starch, which is dispensed during the final rinse. All these

washing powders and liquids are automatically dispensed in the correct quantities and at the correct time in the washing and rinsing sequence, so that once the machine has been set the housewife has no more to do until the clothes are rinsed and ready for drying. After thorough testing this device was particularly commended by the American journal *Consumer Reports* in a recent issue. CONSULTANT DESIGNER Mel Boldt & Associates. MAKER Norge Division of Borg Warner Corp.

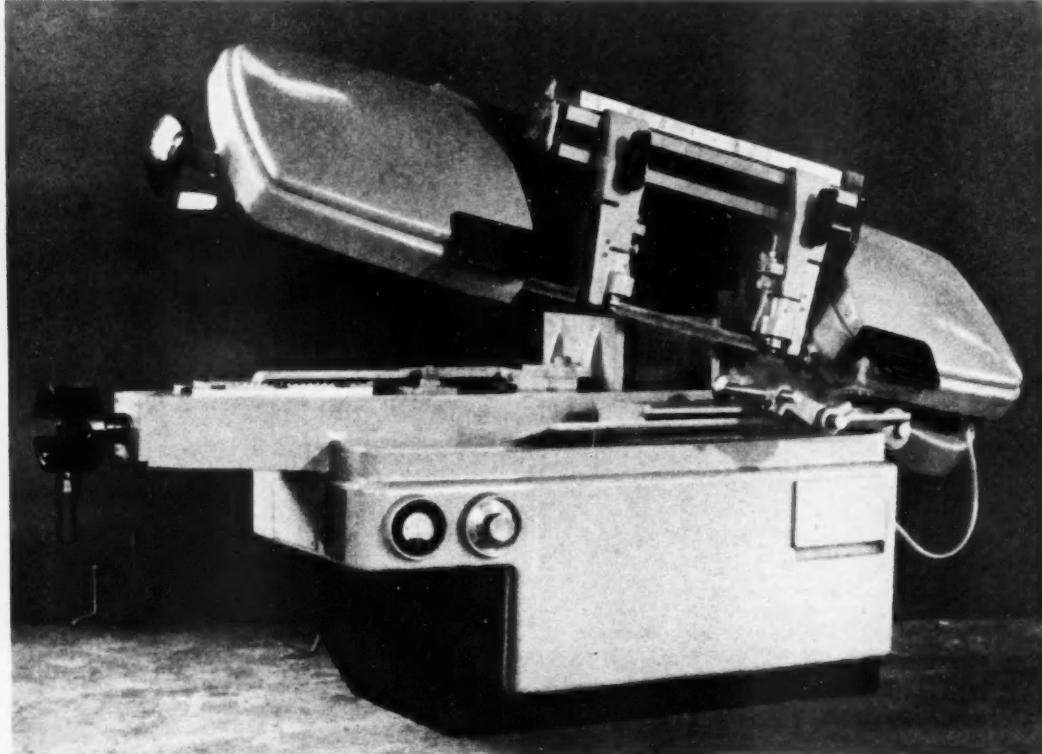
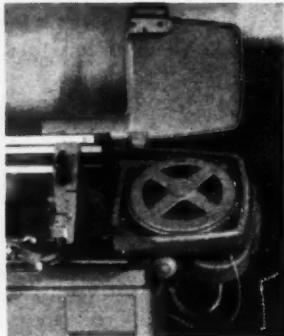


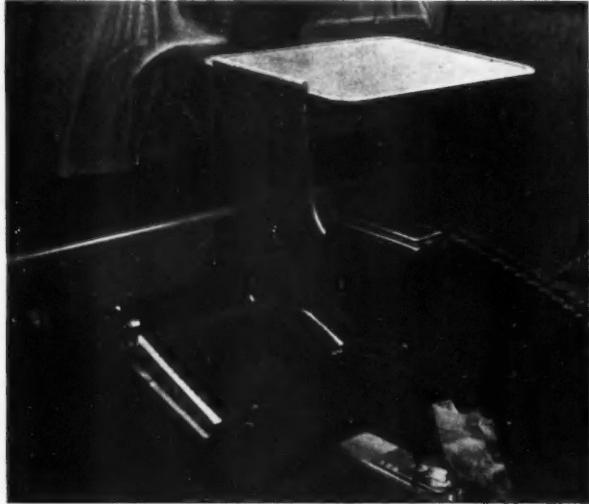
#### Finland: new angle on veneers

The illustration shows a table incorporating a new type of veneered surface, developed by the designer Tapio Wirkkala in conjunction with the manufacturer, Askon Tehtaat O/Y. The effect of concentric rings or undulating lines is evidently achieved by cutting the veneers at different angles; or, as an illustrated leaflet produced by the firm explains: "The solution lies primarily in the realm of spatial geometry and depends on the degree of the angles and the direction of the veneer plies." While this may not help much to enlighten the curious, it does not alter the fact that some extremely original effects have been produced with countless possibilities for pattern making. Sections of the veneer in some cases have been cut out and fitted together in a conventional inlay technique to produce interesting leaf and shell patterns. Birch, padouk, maple and walnut are the woods used.

#### Japan: bandsaw

This high speed metal cutting and band sawing machine illustrates the considerable awareness in Japanese industry of the growing importance of good design, particularly where overseas markets are concerned. The general view shows clearly the attention that has been given to the achievement of simple, uncluttered forms. The detail showing the cover plate lifted reveals, however, the adaptation of the internationally current quartic shape for fashionable rather than logical reasons. Redesigned from an earlier machine the new model is claimed to be capable of cutting an 8-inch steel bar in 15 minutes. This improved performance in conjunction with the new appearance has brought a considerable increase in sales since the machine was introduced a little over a year ago. Three designers were responsible for the appearance - Hideo Takahashi, Kyohei Tsuboi and H. Huiji - while mechanical improvements were the responsibility of Kichisaburo Oba. MAKER Sugimoto Iron Work Co Ltd.





#### Japan: business express

The dramatic *Kodama* electric express train, introduced last Autumn, has been designed as a business special running between Tokyo and Osaka, the two biggest commercial centres in Japan. Although there are speed restrictions on Japanese railways owing to the narrow gauge, the *Kodama* has clipped an hour off the previous timetable and completes the journey in seven and a half hours. Even so the journey is long enough to be tiring and the second class coaches (equivalent to British first class) have

aircraft type reclining seats, ABOVE RIGHT, with folding, clip-on tables and retractable foot rests, ABOVE LEFT. The train also includes writing compartments so that businessmen can work during their journey. The external paintwork is a deep ruby red and cream. Inside, the second class coaches have rich red seat coverings and blue carpet with a white ceiling. The cheaper class coaches have fixed seating, MAKERS Kisha Seizo Kaisha Ltd, Kawasaki Rolling Stock Mfg Co Ltd and Kinki Sharyo Co Ltd.

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# Dial or push?

The arguments for better telephone dial layout and an alternative push button system are advanced in a letter and rejoinder from two experimental psychologists to show how commonly accepted practices could be improved by ergonomic study.

## New dial

Now that the new GPO telephone, 1, is being introduced it is distressing to realise that the ergonomic design fault of the first dial has been perpetuated throughout the world. There is nothing sacrosanct about the ordering of the letters and numbers on the dial; they merely form a convenient code. It is, however, vitally important to get the code right first time when a new system is installed, because it can only be changed thereafter by re-coding the whole system. Unfortunately, the GPO followed the original design engineer and produced its present automatic system with a reversed layout; it has therefore been unable, even if it realised the mistake, to change ever since.

How often do you dial the wrong number or forget the number you are dialling half-way through? Much of the blame can possibly be attributed to the fact that the dial layout and type of operation is not the one which best fits the human operator; it may have fitted the machine best in the very early days, but who is the master and who the servant?

It is suggested that the layout, 2, would have been much easier to use. Notice how the numbers are laid out clockwise and how the letters all read without reversal in an arc from left to right; now compare the standard layout and note how many reversals in direction you make to read off the whole alphabet.

Another aspect, which may have been convenient for the machine but which is certainly not for the operator, is the three extra dead spaces through which the standard dial has to be rotated for every single digit. A saving of more than 30 per cent in time and effort could be achieved in dialling an average number with only one digit dead space. Thus, the suggestion, 2, might possibly have been a better layout for the present type of rotary dialling system. Moreover, by reversing the direction of dial rotation, and thus in fact producing a *mirror image* of the internal mechanism, a practical engineering modification of the present system could be produced, 3. The direction of rotation is re-

versed and it is understood that this would be a practical modification. The layout uses the well learned habit of reading letters from left to right and numbers clockwise. Its manipulation has an advantage because the operating finger swings down to the left in an inward movement bringing it towards the wrist which also rotates naturally inwards. Try dialling a normal 'phone with your left hand to get the similar direction of finger movement and you will find that it is surprisingly easy.

Perhaps no change can be made now, but the moral is clear; any new system should be preceded by ergonomic research to avoid similar mistakes.

B. SHACKEL  
Research Psychologist  
EMI Electronics Ltd  
Feltham, Mddx.

## Push buttons

Mr Shackel is right to draw attention to the way in which bad designs are perpetuated. Of course the telephone dial is numbered the wrong way round, though his suggestion, 2, would be technically more feasible if the direction of rotation were reversed as well, as in 3. In any case, two important questions would be raised: Is it worthwhile? Is it necessary?

Changing the numbering order would require a change in a nation-wide habit. I wonder whether the inevitable interim period of confusion and error (quite apart from the cost) would be worth it in the end. It is one thing to learn to use the dial; to learn to use it differently may be a much more troublesome matter. But there might still be a good case for doing just this if there were evidence that a change is needed. Nobody knows how often dialling errors occur. Data on the incidence of wrong numbers are not readily available. Even if they were, there is at present no way of distinguishing between errors due to faults in equipment and errors arising because subscribers put their fingers into wrong holes.

Let us consider, from the user's point of view, what the telephone dial is for. The user wants to indicate a number or letter/number code to some equipment. Above all he wants to do it accurately. Although the user is not in a great hurry, his memory might be. Experiments have shown that, particularly with the long telephone numbers that we shall be using shortly, the quicker we can recall a number, the less chance there is of getting it wrong.<sup>1</sup> The difference between one second and half a second can be important. So signalling telephone numbers to the exchange is a case where quick action tends to mean accurate action.

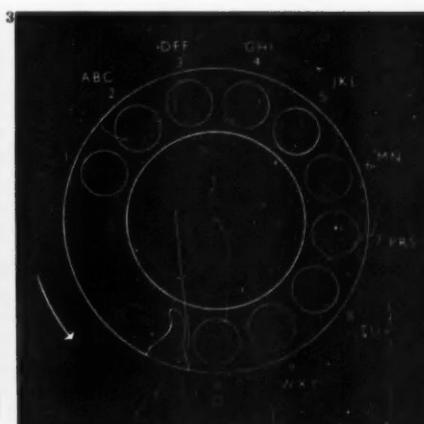
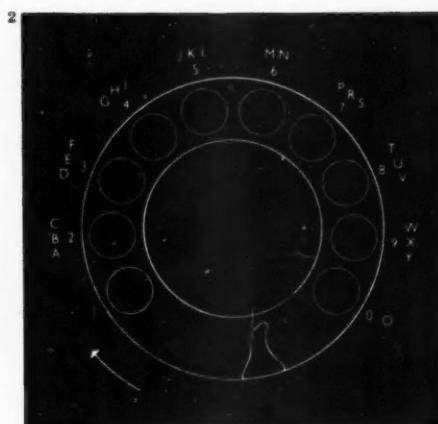
From all psychological points of view, the best method would be for the subscriber simply to speak the required number into his telephone. To avoid the expense of having listening operators it would be advantageous if the equipment could automatically recognise spoken digits. Much research has gone into a study of this possibility, but so far with insufficient success for practical purposes. The recognising machine confuses digits too often. So for the time being subscribers will have to continue setting up telephone numbers by some kind of hand operated instrument.

One of the most efficient ways of doing this is by a set of 10 push buttons.<sup>2</sup> The Post Office is already using these keysenders at the cordless exchange at

I Conrad, R. and Hille, B. A. *Memory for Long Telephone Numbers*, Post Office Telecommunications Journal, 10, No 1, Autumn 1957:

"A test of immediate memory for eight-digit messages was given to 24 female telephone operators, using four different recall conditions. It was found that the presence of a redundant prefix significantly worsened recall. When the message presented was transcribed on to a 10-digit keysender, recall was not significantly better than when transcribed on to a telephone dial. But when a prefix digit was introduced, the dial proved to be an inferior method of transcription. It would seem that at about the level of difficulty when more than half the messages would be forgotten, recall would be improved by the use of a keysender rather than telephone dial."

2 Conrad, R. *Accuracy of Recall Using Keyset and Telephone Dial, and the Effect of a Prefix Digit*, Journal of Applied Psychology, Vol 42, No 4, 1958.



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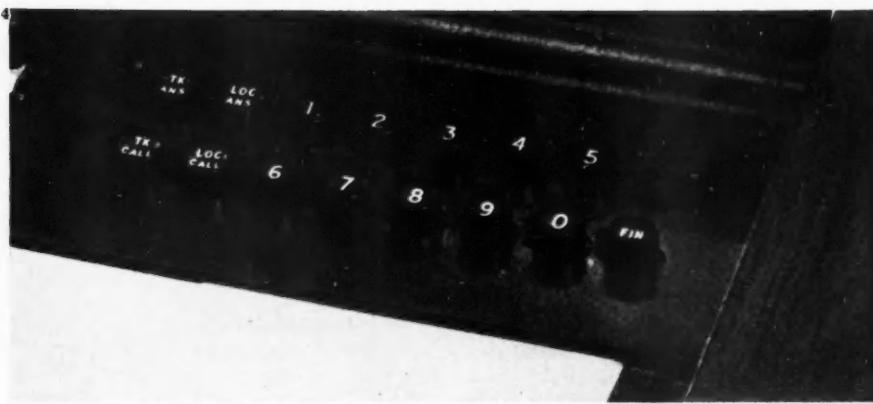
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Thanet, 4, and elsewhere. For one thing, operators can feed numbers into the equipment as fast as they like. One study showed that this was about half a second per digit. Compare this with the dial which, because of the fixed return rate, accepts digits no faster on average than one every second and a half. No wonder then, that when the same group of operators was tested for accuracy using nine-digit numbers for both the standard dial and the keysender, the buttons were faster. Push buttons can of course be selected at rates much greater than two a second. Punch card operators work at about five-six punches per second. But their error rate runs at nearly three per cent, requiring a 100 per cent check which would be far too costly for telephone operators.

Unfortunately keysending equipment is much more expensive than the dial. Therefore, as the dial will be

with us for some time, we should consider the case for placing the digits on an outer ring, as shown on the new GPO telephone, 1. This particular change is not the result of experiments by applied psychologists in this country, but simply follows an American fashion created by Bell Telephone Co., 5.

Indeed the arguments, other than the engineering ones, for outside numbering, advanced by John Gray in DESIGN for July 1958, seem open to question. For example, it is assumed that hiding a number by covering it with your finger leads to uncertainty as to what the number is. I think this would be true if the numbers were randomly arranged. But most of us learn to count even before we go to school. The numeral order habit is firmly entrenched. Surely we all know, without deep cogitation, what the hidden number between seven and nine is. With outside numbering we are denied this

simple clue, and instead have to make use of a spatial relationship. Look again at the photograph of the new telephone, and you will see how tricky this might be if you are not looking directly down on to the dial.

There is only one ergonomically worthwhile modification that could be made to the telephone dial, and that is to speed up the return mechanism, but this, of course, raises engineering problems. Any other changes, such as reversing the order of numbers, reversing the direction of rotation, outside numbering, etc., all seem to me to be changes which will be costly and lack any evidence to suggest that fewer dialling errors will result. Change for the sake of change is surely an entirely unacceptable ergonomic principle.

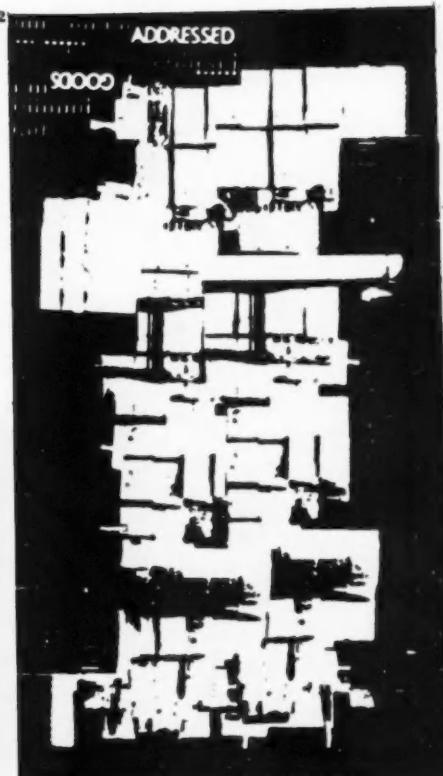
R. CONRAD  
MRC Applied Psychology Research Unit  
Cambridge

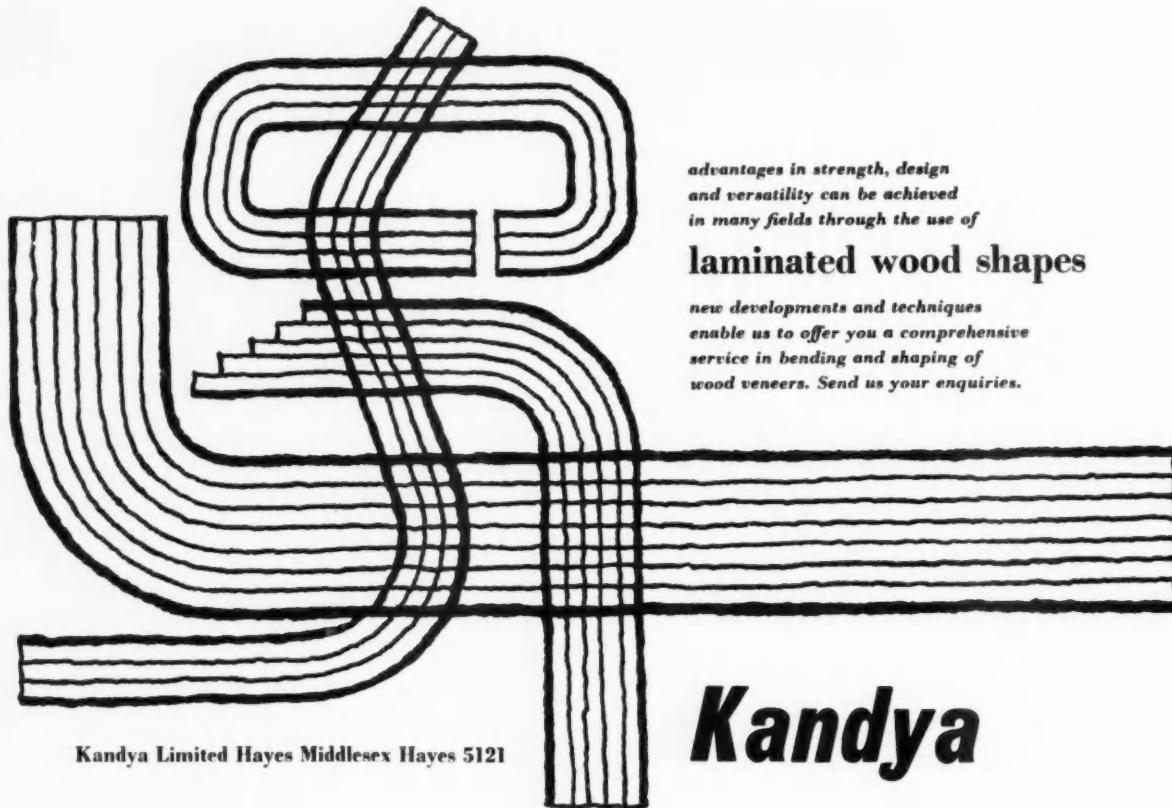
## Miscellany

### Getting the goods

Geoffrey Gale used a photograph of a goods depot at Liverpool Street station as a starting point for the design of a rug he has made.

He writes: "From a series of photographs taken in and around Liverpool Street station one was selected showing the bond store in a hall of the goods depot, 1. The regular and rectangular pattern formed by the crates, goods barrow and back wall made it preferable to the others in this series. I then made a number of identical prints with a great deal of contrast, and from these cut out the broad portions of the images. On a rectangle of card which was in proportion to the finished rug I arranged my images, recut them to fit one to the other, and pasted them down to form the main

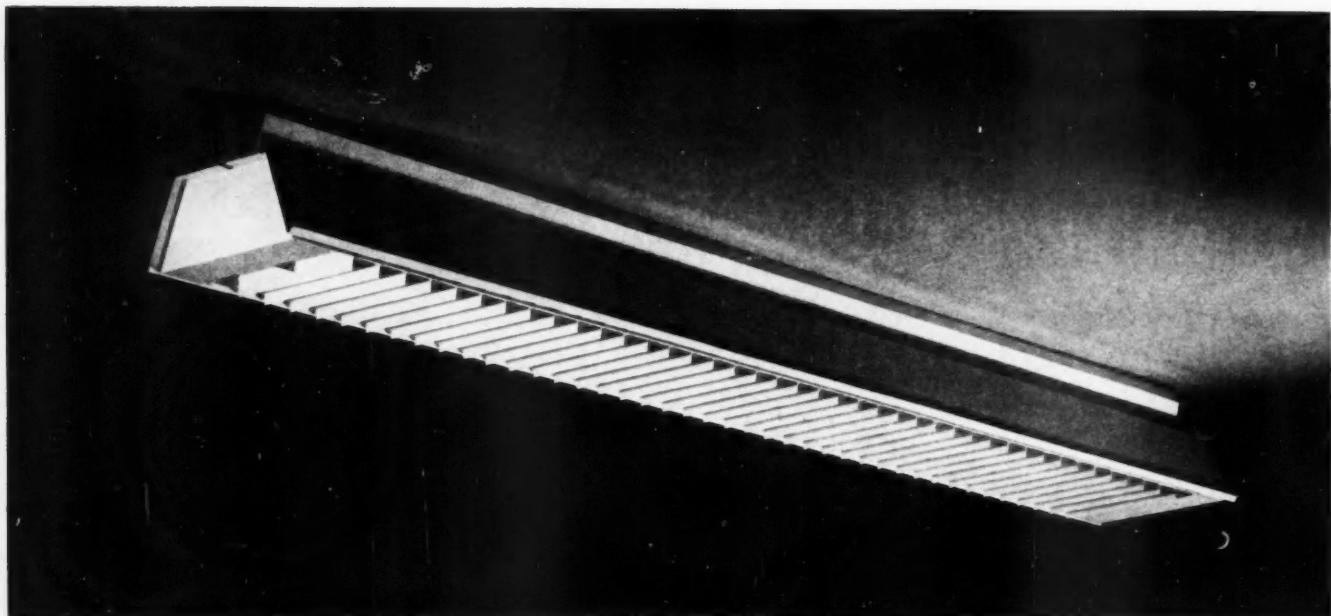




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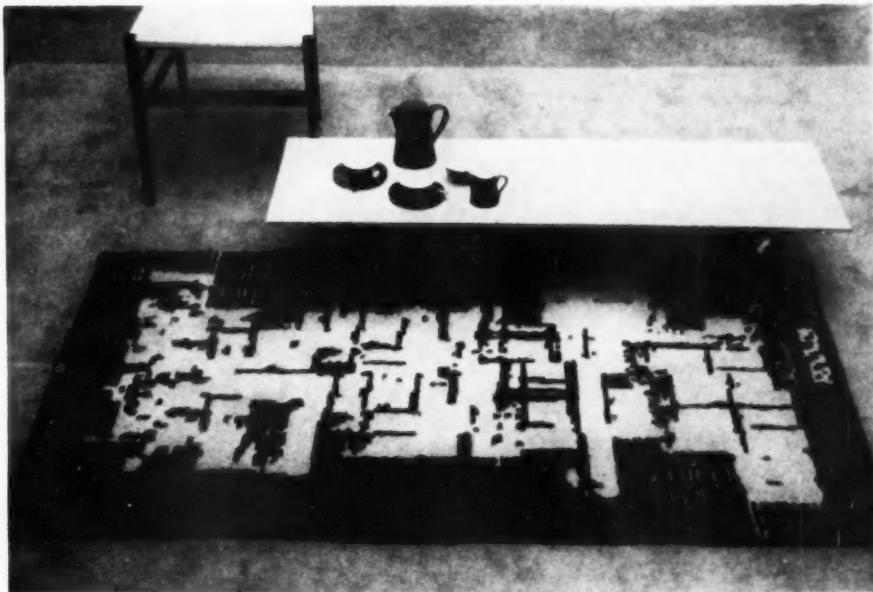
areas of the design, 2. Then by adding new pieces of the remaining photographs and removing parts of the already mounted image the detail was filled in. In the final design, 3, parts of the original photograph repeat themselves, eg the handle of the barrow, the light shining through the back wall, etc.

The scale of the paste up was determined by the size of the images chosen. It was then rephotographed and enlarged to a size where a regular scale could be used. The whole design was transferred to graph paper which became the working drawing from which the rug was made."

### Anthropometric office chair

One of the difficulties with the new anthropometric recommendations for office chairs, published by the BSI and reviewed recently (DESIGN May pages 63-4), is that the public cannot try out the furniture because there are no models made to the new dimensions. The CoID therefore asked the students of the school of furniture design at the Royal College of Art to design a medium priced office chair to the new dimensions. Professor R. D. Russell and David Pye supervised the students' work.

The chair, 4, was shown in an office setting, 5, in The Design Centre recently. In accordance with the recommendations, the height of the chair seat is 17 inches from the ground, the back rest is 5 inches deep, and the height from seat to back rest is 8 inches. A large proportion of the population using this chair should be able to sit with the small of the back supported by the back rest, feet flat on the floor, knees at right angles, and with little or no pressure under the thighs from the edge of the seat. The height of the desk used in the room setting was 28 inches (26 inches from



the ground to the underside of the top of the desk). 6

To launch the exhibition, the CoID held an evening meeting for two BSI committees - that concerned with anthropometric recommendations, and the committee concerned with standards for office furniture. Dr W. F. Floyd, 6, a co-author of the theoretical recommendations\* and a member of the BSI advisory committee for anthropometric evidence for equipment design, gave a demonstration. He showed that office staff ranging from 4 ft 11 inches, to 6 ft, could sit with comfort at the new chair and desk, whereas they certainly could not do so with old style furniture.

A great deal of argument took place at the end of the demonstration. Manufacturers' main objections to the adoption of the new recommendations were: first, that they do not fit in with American and Continental practice (desk height 29 and 30½ inches), and would cause difficulties in the export trade; second, that they do not allow for a kneehole drawer, which, some manufacturers felt, would irritate those who have to store

\**Anatomical, Physiological and Anthropometric Principles in the design of Office Chairs and Tables*, Floyd, W. F. and Roberts, D. F., BS 3044, 1958, 5s.

*Dr W. F. Floyd*

brief paper flat; and finally that it would be difficult to put the recommendations over to the public.

Dr Floyd could not offer advice on the selling aspect, but he did point out that a re-organisation of work and some alteration to the size of side drawers would make it possible to accommodate any necessary paper and equipment without a kneehole drawer. This type of drawer makes it impossible for the majority of people to sit comfortably at an office desk.

BSI officials pointed out that often the publication by the institution of a new idea is an important first step in securing public acceptance. BRIGID O'DONOVAN



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# Reports

## Fitting the job to the worker

An international conference on the theme *Fitting the Job to the Worker*, held recently in Zürich, marked the third phase of a long-term project organised by the European Productivity Agency, a part of OEEC. The project began in 1956 when a group of specialists drawn from OEEC member countries, representing the sciences of physiology, industrial medicine, psychology and engineering visited the USA. The group visited research laboratories, industries and trades union organisations in order to obtain first-hand information and experience of American work in ergonomics.

The second phase of the project was a technical seminar held in Leiden in March 1957, and attended by specialists in various branches of ergonomics; 12 countries were represented. The participants were mainly physiologists, psychologists, industrial physicians and engineers interested in design, production and work study. At this seminar technical questions dealing with specific aspects of fitting the job to the worker were discussed (DESIGN April page 69).

The Zürich conference, held in March this year was wider in its scope than the Leiden technical seminar. The purpose of the conference was to make known to employers' and workers' representatives the possibilities of using the technique of the human sciences in their own industries. This objective was achieved through a series of papers given by specialists in ergonomics from the OEEC countries. The papers illustrated some of the results already obtained from the application of the human sciences to the problems of fitting the job to the worker in various industries. In this manner management and workers were shown some of the ways in which workplaces can be improved and the product made more fit for human use.

### BODY MECHANICS

Great interest was aroused in the papers given by Dr H. L. Schnewlin from Switzerland and Dr B. Schulte from Germany on work design and work layout in accordance with body build and body mechanics; the discussions ranged over a wide variety of industries showing that these problems are now almost universal. Automation will obviously remove many problems, but there will remain many industries which, because of their size or scale of production, may be slow to achieve automation, or may never achieve it at all. In these industries the anatomical factors in work design are of great importance and a sure knowledge of anthropometry and body mechanics is essential for production engineers and designers of factory machinery.

The sessions on the presentation and use of information from the work processes and on the design of controls evoked a vigorous declaration from J. Griffiths, the British Motor Corporation's chief production development engineer: "Industry is not a philanthropic society or a playground for humanists." Mr Griffiths contended that automation would do away with the need for ergonomics since a whole factory would be run by only a handful of operatives with very little to do. This argument was hotly contested and it was pointed out that even machines used in automation should be

designed so that maintenance work could be carried out quickly. In fact, the principles of ergonomics should apply to maintenance work as well as to production work. The ergonomics of the product, especially the motor car, was discussed at this point, and Mr Griffiths came in for a good deal of criticism which perhaps would have been better directed at a design engineer than a production development engineer. The criticisms of most car design made at this point in the conference are those with which readers of DESIGN will already be familiar from articles published during the past few years. Perhaps Mr Griffiths and W. R. Turner (principal technical engineer of the Ford Motor Company), the two representatives of the British motor industry at the conference, will manage to convince the industry that these criticisms have some basis in fact.

The sessions devoted to light and noise showed how much we are beginning to know about the value of good lighting, well engineered, and how little we really know of the effects of noise - except when the noise is very loud and then it damages hearing.

The discussion of biological factors in the arrangement of working periods roamed widely to reach no positive conclusion, except that there are great problems here to be studied by physiologists, psychologists and industry (both management and workers). There is so much variation in the same industry in different parts of the world and even within one country, that it is difficult to reconcile the different procedures and practices which exist.

### SUPPORT FROM MANAGEMENT AND UNIONS

At the conclusion of the Zürich conference the industrial representatives put the following resolutions to the conference:

- 1 That the appropriate application in European industry of the ergonomic conceptions demonstrated during this conference could contribute, not only to the improvement of productivity, more particularly in the small and medium-sized enterprises, but also to alleviating undue strain in individual industrial tasks.
- 2 That the conceptions might be applied with advantage not only to the design of machinery and plant intended for the productive processes, but also to the design of much manufactured equipment intended for human manipulation.
- 3 That the industrial federations in the various European countries should be invited to recommend their members to take ergonomics principles into account whenever they are faced with problems of the design of machinery and equipment for human use.
- 4 That the European Productivity Agency should be invited to follow up this conference with such action as will further disseminate the knowledge of past and continuing studies in the ergonomic field.

The trades unions' representatives gave their support to the wider use of ergonomics and emphasised the need for more effective communication between the scientists working on ergonomic problems and those on the factory floor who might be affected by these researches.

W. F. FLOYD

## Fitting the ergonomist to industry

"I have never had a decent driving position yet", said Ernest Marples, Postmaster-General, opening the Ergonomics Research Society conference at Oxford recently. Mr Marples said that there were 34,000 vehicles in the service of the Post Office and so far a correct position for the driver had not been achieved. . . . "In the Post Office we must fit the machines to the men." Mr Marples referred to the ergonomic work already done by his consultants and full time staff. "I am doing what I can before the election", he said, "to

place on record a plan that puts ergonomics well to the fore."

The conference, *Ergonomics - its Place in Industry*, heard papers from workers in the sphere of ergonomics from Britain, Western Germany, the Netherlands, USA, France and Sweden. More than 150 members and interested persons from industry discussed some of the most important work done since the society was founded in 1949.

The major task was to decide how ergonomists - anatomists, physiologists and psychologists - could successfully introduce their work to industry and commerce. Speaking on behalf of one of the few major firms represented, the Dunlop Rubber Co Ltd, L. V. Green of the work study department, asked: "How can industry organise to use ergonomics? The most suitable existing departments, at least in large factories, are those of equipment design, work study and personnel. Or are the research associations the best institutions for doing applied ergonomics? Moreover, can enough people be found who are competent to work in industry?" Work study was felt by several industrial speakers to be the most suitable department for developing ergonomics.

### TRAIN THE ENGINEER

"Industry is becoming rapidly aware of problems in the field of applied psychology," said D. E. Broadbent, director of the MRC Applied Psychology Unit at Cambridge. "Existing facilities are not adequate to do the work required, and it thus becomes important to consider how research facilities should be expanded to meet the need." Mr Broadbent felt that a doctorate in psychology is not necessarily the best background for the person who wishes to work on ergonomics in industry. He advocated post-graduate training for engineers.

Speaking as one who has already had some experience of working in industry, K. F. H. Murrell, department of psychology, Bristol University, said: "Problems in industry are often long term and there is a pressing need for more research at shop floor level."

### PRACTITIONER'S POINTS

There were several case histories of ergonomic work in industry. Speaking on behalf of EMI Electronics Ltd, B. Shackel described his work on instrument layout and systems design. Dr R. Conrad of the APRU at Cambridge, described recent work in the Post Office on trunk dialling and letter sorting. Also speaking of the Post Office, Dr W. F. Floyd of the department of physiology, Middlesex Hospital Medical School, said: "Studies of posture have been concerned principally with seating in cordless switchboard telephone exchanges in Post Office factories and at the single-position letter-sorting machine. This study is now being expanded to include motor vehicle seating."

Two further contributions concerned both architects and industrial designers. From the department of building science, Liverpool University, J. K. Page said: "One important subject that has so far been almost entirely neglected by the architect is anthropometry. Architects are largely trained to produce what looks right rather than what is right. Recent investigations of chair and table design reveal how far astray this visual approach can go."

On the question of training, an account was given by Dr Grieves of the department of psychology, Bristol University who, working with Mr Murrell, has already run two courses on the design of equipment for human use. They were organised for engineering design staff by the department of work study of the Engineering and Allied Employers' West of England Association in May 1958 and February 1959. Each course was of two weeks' duration and aimed to provide an appreciation of the nature and scope of ergonomics.

M.F.



## lecture theatre seating

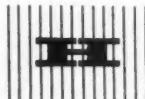
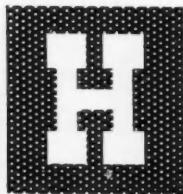
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*Race seating, now specified by many universities, is here shown in the new Medical School, University of Liverpool (architects: Weightman & Bullen)*

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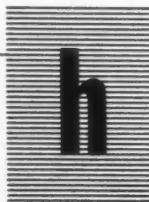
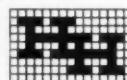


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# NEWS

## PEOPLE

### Deputy director, CoID

The CoID announces the appointment of J. Noël White to be deputy director from January 1 1960, when Paul Reilly, the present deputy, succeeds Sir Gordon Russell as director, CoID.

Mr White who read archaeology before the war, served with the Royal Air Force until he was asked to work as an air historian on the official history. In 1947 he was appointed to the staff of the Royal Commission



J. Noel White

on Historical Monuments (England). After spending six years with the Rural Industries Bureau as information and exhibitions officer, he joined the CoID as head of the information division in 1954, about 18 months before The Design Centre was opened in Haymarket.

### Cantu hat-trick

This year, for the third time in succession, Nigel and Sheila Walters have an award in the Cantù international furniture competition.

Cantu, a small town north of Milan, could be called the High Wycombe of Italy. The manufacturers centred there are mostly small firms, making traditional craft-based furniture. A few years ago, in order to promote new designs and to give the craftsmen an opportunity to demonstrate their skill and versatility, the manufacturers formed an association with the township in order to run this international competition.

This is now a biennial event. A different international jury is appointed for each competition, the winning designs being made up by local craftsmen and



Nigel and Sheila Walters

displayed in a pavilion specially built for the exhibition.

This year 628 projects from 53 countries were submitted, and Mr and Mrs Walters shared the first prize (with a Japanese designer) in the competition for dining room furniture.

Mr Walters describes their prize winning entry as

"slightly brutalist". The furniture is designed so that the joints and square sections are emphasised to form the chief decorative feature. The dining table has two fixed heights, one standard and one coffee table height; the dining chairs are upholstered, and a cocktail cabinet and sideboard make up the rest of the range. Mr and Mrs Walters will be going to Italy to supervise the construction of the prototypes for the exhibition, which opens on September 5.

Nigel and Sheila Walters were at the Royal College of Art during the war; Mr Walters is now head of the Interior Design and Furniture Department at the LCC Central School of Arts and Crafts. He has also designed bedroom furniture for Heals, and a very successful range of kitchen furniture for F. Wrighton & Sons Ltd. Apart from coping with their four children, Mrs Walters designs plastics veneers for Heals and tea-cloths for Webb & Co Ltd; she also does graphic design and typography.

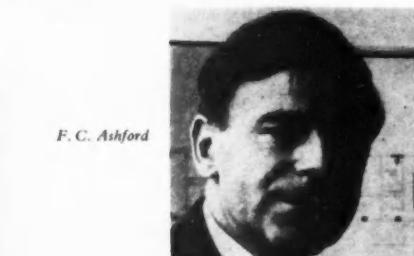
### RCA appointment

Misha Black has recently been appointed professor of Industrial Design (Engineering) at the Royal College of Art. His appointment follows the resignation of F. G. Ashford, who had decided to resume practice as an industrial design consultant and an adviser to industry on industrial design training.

Mr Black, 49, architect and industrial designer, is a senior partner of Design Research Unit. He is a mem-



Misha Black



F. C. Ashford

ber, CoID, and design consultant to the British Transport Commission for diesel and electric locomotives.

Mr Ashford joined the Royal College of Art in part time capacity in 1955, and a year later took up the full time appointment as reader in the department. During the past few years the number of students in this department has increased to such an extent that the College decided to create a chair of industrial design (engineering).

### Liaison and research

Nigel Bicknell has joined THM Partners, the consultant designers, as assistant to John Tandy, one of the

senior partners. Mr Bicknell recently left the Foreign Office where his previous appointment was United States regional adviser on information. At THM he will be responsible for top level liaison and research work for major clients. This is the first of an important new series of executive appointments that will be made by THM.

## EXHIBITIONS

### All Scottish

*All Scottish* is the title of the next exhibition to be held at the Scottish Design Centre in Glasgow, from August 26–September 25. All the goods on show will be made in Scotland; the majority of the exhibits will be chosen from 'Design Index', but there will be other items – including sports goods, engineering products and graphic work – from categories not at present included in the 'Index'.

This is the first time the CoID Scottish Committee has held an exhibition of goods that are all-Scottish; the committee aims to show that Scotland produces goods which combine durability and ease of maintenance with good appearance.

### CoID and Canada

In association with the Board of Trade, the CoID is to have a stand at the Canadian National Exhibition, which will be held in Toronto from August 26–September 12. The stand, which will form part of the UK Government exhibit, will be designed by Leslie Gooday. Over 300 products will be on show, all selected from 'Design Index'.

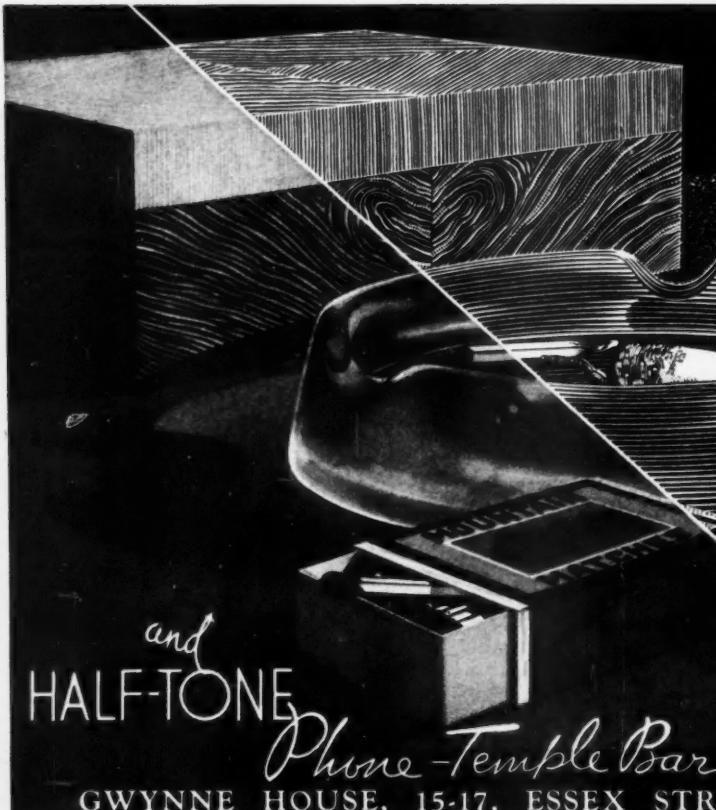
### Basic design explained

The exhibition of basic design studies from the Department of Fine Art at Durham University, and from Leeds College of Art, held recently at the Institute of Contemporary Arts, helped to clear up some of the doubts and misunderstandings that have grown up around this subject. Although basic design, as an exploration of abstract aesthetic ideas in two and three dimensions in a variety of materials, has been practised for several years in a few isolated art schools, its value as a basis for art and design training has by no means been generally accepted. This exhibition established three points which should help to remove the subject from its pinnacle of mystery.

First, it suggested that the conventional academic disciplines such as life drawing and anatomy have a logical place in basic design if treated analytically – giving a new significance and direction to these often outworn practices. Second, it suggested that the greatest benefit is to be derived from the conception of basic design as a broad foundation for later specialisation with instruction given by a number of teachers. This seems more logical than the current practice in some schools of having separate basic design courses – each under a single teacher – for each department. Third, the exhibition demonstrated that many of the exercises are not based merely on aesthetic whim but are logical solutions to set problems, often worked out methodically and scientifically.

Only one aspect of the display lacked conviction. Some of the three-dimensional models were so well finished that they seemed to be considered as pieces of

*continued on page 65*



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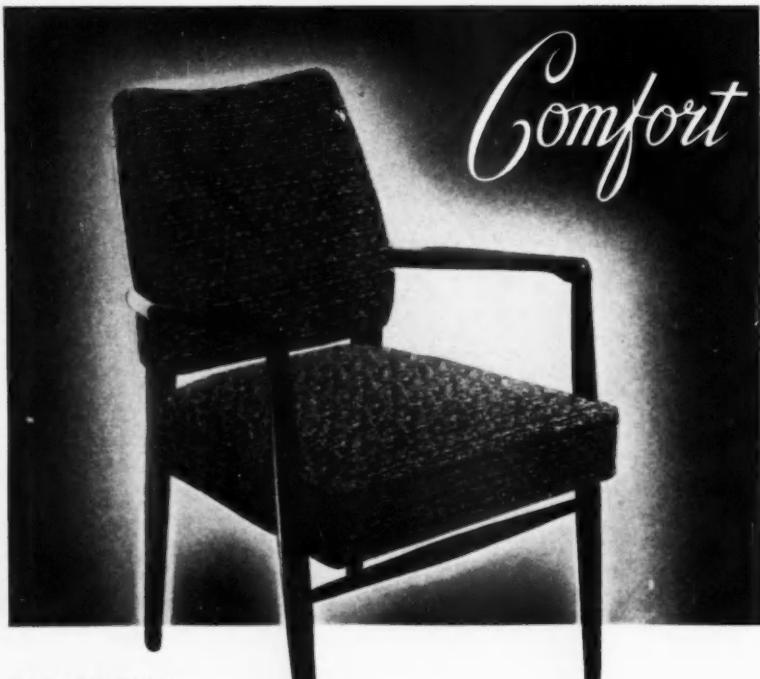
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sculpture – as ends in themselves which is not their purpose at all.

#### Three centuries of Swedish ceramics

The recent exhibition of historical and modern pottery by the Swedish firm of Rörstrand left mixed impressions on the visitor. This was the first full scale exhibition of ceramic design held at the Victoria & Albert Museum since the war and it was arranged in co-operation with the Nationalmuseum in Stockholm. By far the larger section was devoted to historical designs, but one looked in vain among the florid eighteenth and nineteenth century work for some clue to the foundations on which the modern Scandinavian idiom is based. Apparently, the break with the past was sudden, with only the barest indication of a possible transition during the inter-war years.

As might be expected, the modern work was refreshing in its conviction and sureness of approach. It was interesting to see how the textures and effects of the craft work had been translated, often by the same designers, into terms of mass produced earthenware and porcelain, in which pattern seemed to be conceived as an organic part of the designs as a whole. But a slight sense of disappointment resulted from the feeling that we had seen it all before. One had hoped to find some new and vital direction that suggested a continuing evolution of the Scandinavian approach.

No such feeling, however, existed about the design of the display itself, RIGHT. This demountable structure in grey and white, with plenty of natural pinewood, was a splendid example of the way to show products to their best advantage. Its simplicity and restraint commends itself to all those concerned with the exhibition of British products abroad.

J.E.B.

#### Caravan carnival

Following what it claims to be the best year in its history, with an output of 30,000 caravans and record

#### Scottish exhibition

Part of the Design '59 exhibition which is on show at the Scottish Design Centre in Glasgow until July 17 (DESIGN April page 65). Since its opening by Mary Grieve, editor of Woman, it has attracted a large number of visitors, with daily attendances averaging 350.



Part of the modern section of the Rörstrand exhibition shown recently at the Victoria & Albert Museum. See Three centuries of Swedish ceramics.

exports, the British caravan industry is to stage the first *International Caravan Exhibition* ever to be held. The exhibition will be organised by the *News Chronicle* and the National Caravan Council, and will be held at Earls Court from September 23 – October 3. It is expected that caravans from America, Germany, France and Italy will also be on show.

#### Living in the present

Helen Kapp, curator of the Wakefield City art gallery and museum, is co-operating with a panel of architects, designers and local retailers to stage an exhibition called *Living Today* at the museum.

Exhibits will include a gas and an electric kitchen, a dining room, living room, and bedroom, a bachelor flat and a bed-sitting room. The exhibition will include photographs from the CoID's *Designs of the Year 1959*.

#### REPORTS & CONFERENCES

##### Design training

The audience for the recent Federation of British Industries' conference on the training of industrial designers for the engineering industries (DESIGN June page 19) was fairly equally divided between those concerned with education and those from industry. Both sides had some valuable points to make. Discussing the demand for trained designers, Sir Gordon Russell pointed out that the demand over the next two years already exceeded the known supply (students now under training in the colleges). It is, he said, the responsibility of industry to ensure that it offers adequate remuneration and status to designers, makes its requirements known, and gives all possible help to existing courses.

There was considerable discussion on the best place for training, whether it should be in an art or technical college, or whether there should be co-operation between both. The industrial designer (engineering) was defined as an artist or sculptor with technical training but the problem of how such a man is selected in the first place, and then how he is trained, still remains to be solved.

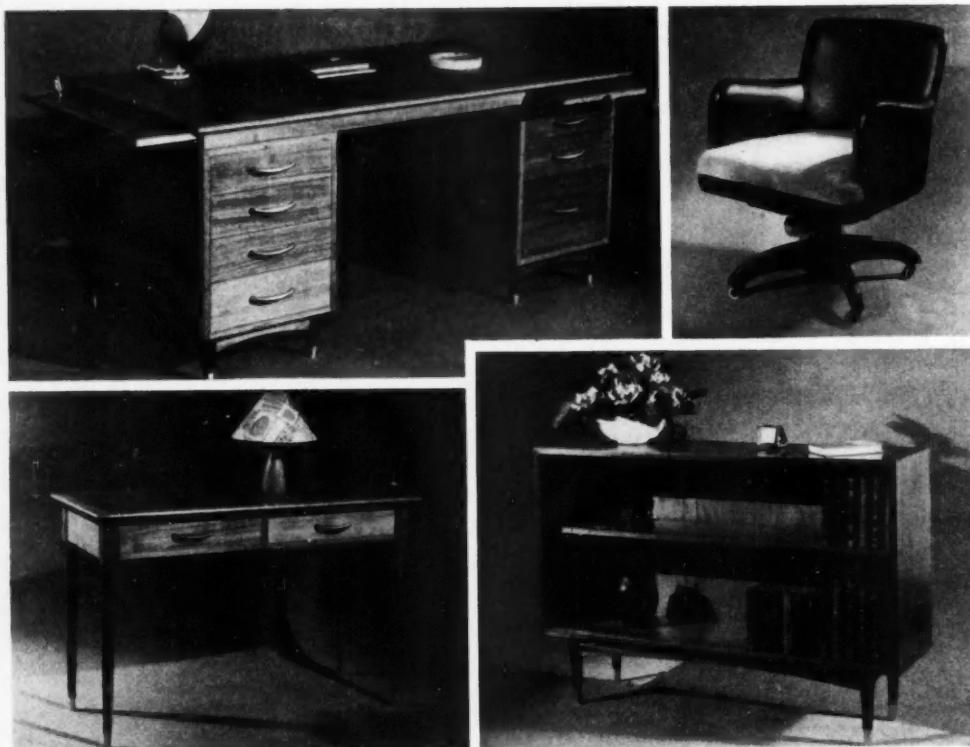
The conference was opened by Lord Chandos, chairman of AEI, and in addition to Sir Gordon speakers included D. W. Morphy, joint managing director, Morphy-Richards Ltd; W. L. Mather, director Mather & Platt Ltd; W. L. Stevenson, principal, Liverpool College of Art; and H. Buckley, principal, Oxford College of Technology. Sir Ernest Goodale, chairman, FBI Industrial Art Committee, introduced the conference and was chairman of the first morning session. Leslie Julius, managing director, S. Hille & Co Ltd, was chairman of the second. Misha Black, who was recently appointed to the Ministry of Education Advisory Council, was chairman of the afternoon session. The conference was summed up by Sir Norman Kipping, director general of the FBI. S.R.F.

##### Accident prone

France has recently passed a law requiring the elimination of all projecting bumper, grille or wood ornaments that might injure pedestrians. Vehicle width indicators and devices to deflect insects or snow must be lightly made, and be either elastic in construction, or flexibly mounted on springs. External and interior mirrors must not have sharp edges.

It is not generally realised that certain types of mascot are in fact prohibited in Great Britain (Road Traffic and Vehicles, 1955, No 482, Section 103); continued on page 67

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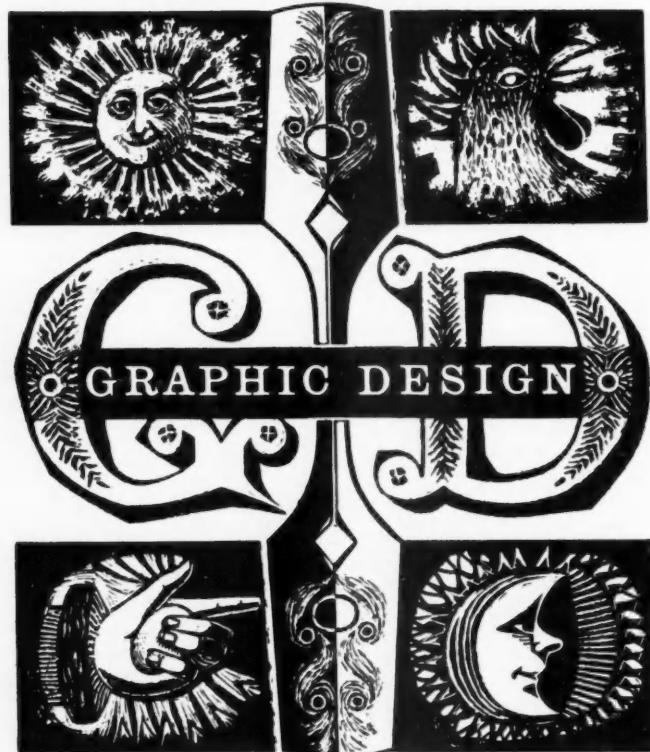
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however for various reasons the law is not enforced.

We asked Dr H. J. H. Starks, head of vehicles section, Road Research Laboratory, to comment on this question of mascots. He writes: "We have no particulars of accidents in which people have been injured by mascots on motor vehicles. As far as we know, the statutory regulations in this country, as well as in France, were based on common sense considerations rather than on factual evidence obtained in accident investigations, although it may well have been that a few particular incidents drew attention to the desirability of removing sharp or potentially dangerous objects from the front of motor vehicles."

#### Mascots in the US

A page from the May issue of the US Consumer Bulletin (reprinted by special permission of Consumer Bulletin, published by Consumers' Research Inc, Washington, New Jersey,

"One of the changes made following the regulations in this country was the replacement of the long sharp-pointed metallic beak of the snipe mascot on the Humber Snipe models by a rubber beak. In a recent court case, however, a judgment was given that the aeroplane type ornament on a British made car was not a mascot and did not come within the province of the particular regulation." The case followed a fatal accident in which a man was struck by a car, the ornament on the bonnet piercing his chest. On behalf of the jury the foreman told the coroner "We would like to see something done about these pointed objects being taken off cars." The coroner told the jury there

was no question of negligence on the part of the driver.

#### COMPETITION

##### Silver and gold

The Design and Research Centre for the gold, silver and jewellery industries has recently announced its 1959 National Design Competition for gold, silver, electroplate, jewellery, fancy goods and souvenirs. Further details are available from The Administrative Director, Design and Research Centre, Saint Dunstan's House, Carey Lane, London EC2. The last date for the receipt of entries is September 1.

#### LETTERS to the Editor

##### Policy for potters

SIR: How very relevant was the article *Paradox in China Sales to USA* (DESIGN May pages 26-30) by Alec Heath and David Queensberry.

We have now all had an opportunity of visiting the Rörstrand exhibition at the Victoria & Albert Museum to observe the methods at least one Scandinavian firm has employed in overcoming some of the many difficulties now facing British manufacturers (see page 65).

A noticeable feature is that where in the past the few progressive British firms have tended to bring in painters or illustrators, it would appear that the Scandinavians have generally engaged artist craftsmen with first hand experience of the medium, and who have as a result given so much vitality and relevance to the firms' industrial products.

Should such a policy be introduced in this country it would, as Mr Heath suggests, need skilled perception and discrimination at the highest level. With few exceptions there is little indication as yet that pottery manufacturers consider such a policy desirable or necessary. If, as David Queensberry suggests, we are concerned more with decoration than shape, and when so much is being talked about a trend towards traditional designs, the following quotation is certainly still valid: "Tradition is then seen as the pattern of change to which we contribute, and not the undeniable rule by which we are dominated."

It would appear that the roles are now somewhat reversed, in that where Rörstrand's beginnings entailed a fight against the world-wide influence of the first Josiah Wedgwood, we now have to find an answer to the lead that the Scandinavians and Germans have in certain world markets.

No solution will be possible till the technical excellence and organisation that we undoubtedly possess are backed an imaginative and vital design policy.

KENNETH CLARK  
25 Howland Street  
London w1

##### Colour co-ordination

SIR: In his letter (DESIGN May page 69) Gordon Dunn expresses himself with such vehemence that it seems impolite to point out that he is merely at cross-purposes with us on the subject of our article *Colour* (DESIGN March pages 34-40).

In summary, Mr Dunn's points appear to be:  
1 To work to limited ranges of colour is unrealistic, because colours alter in appearance with changes of

*continued on page 69*

## Pedestrian Hurt in Accident

Ten-year-old [REDACTED] remained in "critical" condition at [REDACTED] hospital from injuries suffered when his [REDACTED] police [REDACTED] darted in front of his car from between two cars parked at the curb. A hood ornament on the car punctured the boy's chest.

The following caption appeared beneath a photograph showing a sharp spear-type ornament on the hood of a popular make car:

**TWO RELATED ACCIDENTS** Wednesday morning on [REDACTED] Street in [REDACTED] resulted in the critical injury of seven-year-old girl. Two little girls, apparently looking up the street toward the truck accident, were struck by a car in the block on [REDACTED] Street. One girl, [REDACTED], suffered a serious head injury, but her friend, [REDACTED] also seven, was not seriously hurt. The offending instrument was the long, pointed hood ornament on the car driven by [REDACTED]. It struck the [REDACTED] girl in the side of the head.

### Car Ornament Plays Part In Solving Fatal Hit-Run

An automobile radiator ornament played a major part in the solution of a fatal hit-and-run case in [REDACTED] police reported last night.

The fixture was imbedded in the clothing of [REDACTED] of 72, of [REDACTED] St.,

#### Envoy Warned On Cars

Dutch traffic policemen were informed yesterday to remove the "dangerous ornaments" on their cars or receive tickets.

The Netherlands Parliament, concerned about injuries caused by the eagles, lions, rockets and other hood ornaments, outlawed the gadgets. Cars made in the U.S. were singled out as the chief offenders.

This caption appeared with a photograph showing a woman impaled on a hood ornament:

**PEDESTRIAN SPIKED** — This woman, identified as Mrs. [REDACTED] hangs grotesquely from car's hood ornament after being struck in [REDACTED] City suburban street. Victim is reported in critical condition.

#### Station Wagon Kills Boy, 9

A speeding station wagon struck a 9-year-old boy this morning and carried him 50 yards to his death. The child was dead on arrival at [REDACTED] Hospital.

The city's accident investigator [REDACTED] said the boy was struck at [REDACTED] Street and [REDACTED] Ave. The impact knocked both sandals off his feet. The driver was [REDACTED]

[REDACTED] said the boy ran in front of his auto. The hood ornament, about 12 inches long, pierced the boy's forehead.

The vehicle crashed into two parked cars, doing about \$225 damage.

## Auto Kills Pedestrian On Viaduct

A pedestrian, 28-year-old [REDACTED] of [REDACTED] St., was killed Wednesday night by an automobile on the [REDACTED] viaduct.

Police said [REDACTED] lived only a few minutes after he was hit by a station wagon driven southeast into downtown [REDACTED] by [REDACTED]

[REDACTED] was thrown onto the hood of the vehicle. The impact snapped his head back denting the hood. His lower back was punctured by the streamlined hood ornament.

## CHILD, 3, DIES AFTER A FREAK CAR ACCIDENT

Girl's Skull Pierced by Radiator Ornament

of Mr. and Mrs. [REDACTED] 3, daughter of [REDACTED] Ave. [REDACTED] who suffered a punctured skull in a freak auto accident Sunday night at [REDACTED] and [REDACTED] roadsides. [REDACTED] died Tuesday in [REDACTED] hospital.

The hood ornament of the car driven by [REDACTED] 40, a truckdriver, of [REDACTED] rammed through the [REDACTED] auto's right rear window, striking the girl in the head, according to the police

#### Struck by Auto, Victim Impaled

Victim of [REDACTED] Ave. was injured critically last night when he was struck by a car at [REDACTED] Ave. and [REDACTED] St. and was impaled by the car's hood ornament.

He is in [REDACTED] Medical Center with knee and head injuries, multiple body lacerations and a puncture of the left side of the back.

With this story was a picture underneath which the following caption appeared:

#### IMPACT POINT

Police Sgt. [REDACTED] holds flashlight on the hood ornament which drove into the back of [REDACTED] Dent in hood shows where [REDACTED] head and shoulders hit.

Car manufacturers could, in a matter of weeks, discontinue use of spear-like ornaments on their cars, appendages repeatedly emphasized by CR since 1955 as real but quite needless hazards. Few newspapers will name the car, or print a picture that reveals the make of car involved in a hood ornament injury. If they did, leaders in the industry would quickly issue the necessary "stop-orders" to their stylists.

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## TV course

The LCC Central School of Arts and Crafts is running a course in television design for students in the theatrical section. The purpose of the course is to give practical instruction in

television techniques, and the BBC has given facilities for study on the spot. Some of the students are seen here at one of the classes under the direction of Stephen Bundy, who is a senior designer in the BBC-TV service, and chairman of the television group of the SIA.

texture and lighting, and any skilled painter can mix the required paint colour on the spot.

2 Architects should leave colour alone; it is a specialist subject in which they are incompetent, unimaginative and lacking in confidence.

3 To use Munsell references is ridiculous.

These comments are in our view largely irrelevant. The approach we advocated in our article has to be judged against present-day trends in the building industry, not against the background of 'home-decoration' and 'do-it-yourself' which is a separate field of activity, but the one, we think, Mr Dunn may have in mind. The trend in building design and construction is towards a bringing together of items made, and sometimes designed, in the factory. Many of these, such as window-frames, flooring, wall or ceiling panels, bathroom and office equipment, already have their final colour before they leave the factory. If architects persistently ignored the colour ranges in which such items are offered, and always insisted on their own personal preference, in the manner Mr Dunn suggests, there would be much waste, production would suffer, and prices would inevitably rise.

When Mr Dunn says that paint colours can be mixed on the spot, he is thinking of the small back room, not of the expense and time such methods would involve in terms of the vast building programme in this country. The problem of colour range design is a very real one that is being faced, despite all the difficulties, relevant or otherwise, which Mr Dunn recites.

The Munsell Atlas is, as we said, a calibrated collection of colour chips, open to sub-division or extension. It is already doing service in industry for checking and grading the colours of car-bodies, tomatoes, silk-yarn, etc, and is too well established to need apology. It is much more to the point to consider how useful it can be in the field of building than to dismiss it arbitrarily. One of the purposes of our first article was to show how it can be used with advantage, and we shall be developing these ideas further in our next article in September.

BILL GLOAG

MICHAEL KEYTE

13 School Lane

Welwyn

Herts.

## All my eye

SIR: A recent issue (DESIGN April pages 24-31) had an article of great interest called *On the Line of Sight*. The title block led the reader's eye across to some lines of type over 4½ inches wide, where the first sentence was three lines long, broken by only one comma. Above, like a pillar box, was some bold print which began "This is the first joint" (beef or mutton, I wondered).

Hard on the eyes and hard on the mind. We do not need the special instruments, described in that article, to tell us that long lines of type are hard to read: or that commas help the mind to rest for a moment, in the pauses during a long sentence. All this is elementary: it is a question of good manners. Which is to come first, the reader's comfort, or the layout man's exquisite sense of balance? I find it sad that so good a magazine should at times be so very unreadable, when it is striving for effect. What is the use of 16 beautiful openings, supposing that only one subscriber in 10 reads the copy? You can do better than this. You did far better in your May issue.

R. A. BELL

23 Kingswood Close

Englefield Green

Surrey

## BOOKS

## Perception and communication

D. E. Broadbent, Pergamon Press, £2.15s

Human behaviour is subject to constantly changing interpretations and as the designer could and should be a principal instrument in affecting human behaviour it is important that he understands and respects these interpretations. This book by Donald Broadbent, of the Applied Psychology Unit of the Medical Research Council, deals with the problems of hearing "considered from both a cybernetics viewpoint and from a detailed examination of the experimental literature". He uses auditory rather than visual perception to examine problems of attention in relation to simultaneous stimuli; in other words the relation of a stimulus to the mechanics of the response.

The value of such a study to the designer is not so much that it offers him information useful in the

solution of specific design situations (although it well might), but rather that it serves as general orientation. It also provides him with the chance to widen his frames of reference and to ask new questions, which in design are more important than the answers.

ROGER COLEMAN

## Uppercase

*Editor Theo Crosby, Whitefriars Press Ltd, 3s 6d*

This magazine devoted to the graphic arts will cover the whole field of visual communications. The first issue showed the work of Eduardo Paolozzi (notes from a lecture given by the artist at the ICA last year), John McHale, and Magda Cordell, and included a note on Elizabethan art by David Piper. *Uppercase* should be welcomed apart from its contents, for its lively layout.

## Addenda

DESIGN June page 23: the credits for the Horlicks advertisement should have been given as follows: DESIGNER H. George; PHOTOGRAPHY Carlton Artists; ADVERTISER Horlicks Ltd; ADVERTISING AGENT J. Walter Thompson Co Ltd.

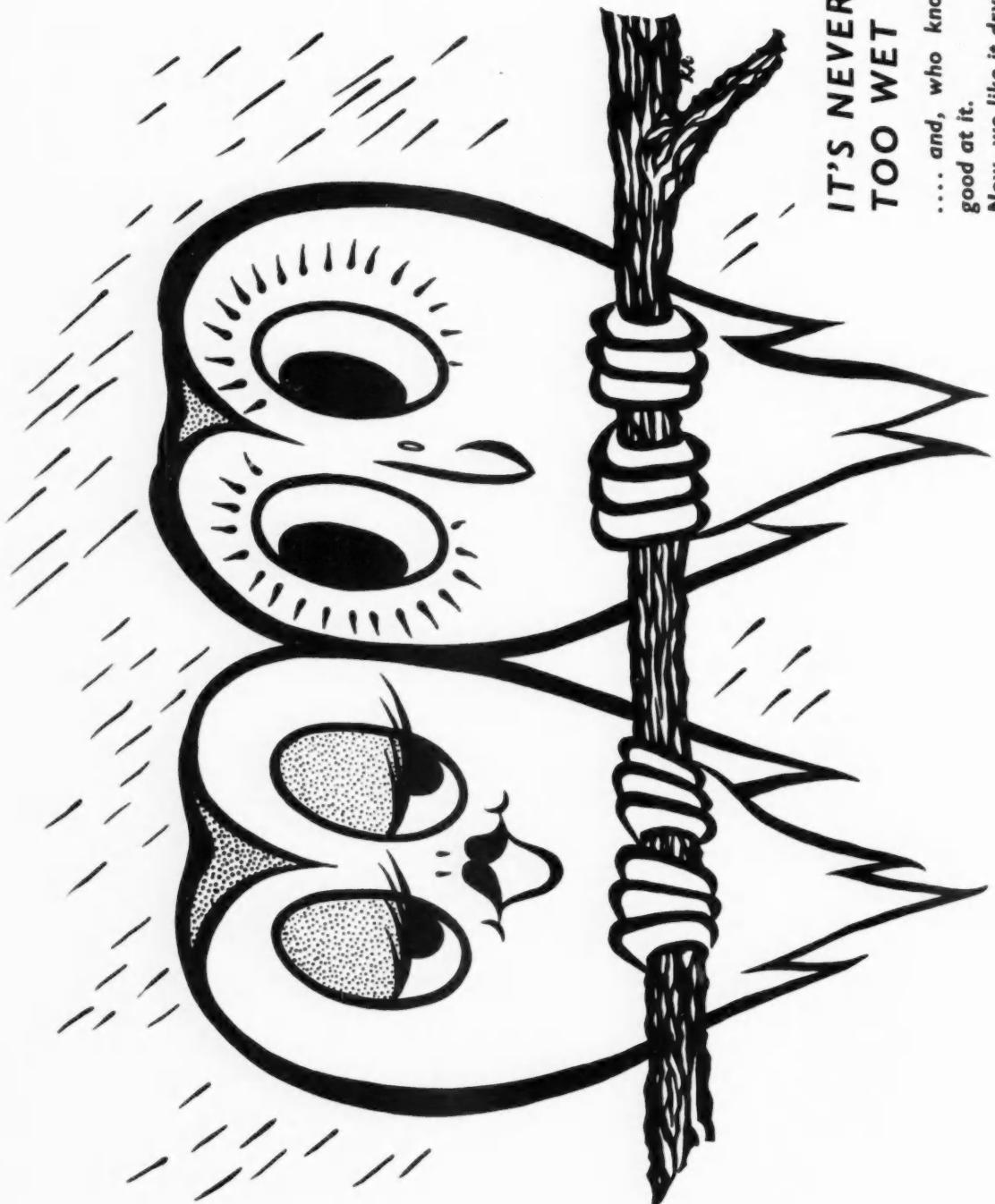
DESIGN June page 51: the Melaware cups and saucers were designed by David Powell and A. H. Woodfull.

## MANUFACTURERS in this issue

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Andrews MacLaren Ltd, Barby, Nr Rugby  
Arlington Plastics Development Ltd, Harlow, Essex  
Ashton Bros & Co Ltd, 29 Portland St, Manchester 1  
Atlas Lighting Ltd, 233 Shaftesbury Avenue, W1  
Brades Nash Tyzack Ltd, Oldbury, Birmingham  
British Replin Ltd, 20 Belvidere Terrace, Ayr, Scotland  
Burco Ltd, Rosegrove, Burnley, Lancs  
S. Clarke & Co Ltd, Bowling Green Lane, EC1  
Connolly Bros (Curriers) Ltd, Charlton St, Euston Rd, NW1  
Samson Courtauld & Co Ltd, 16 St Martin's-le-Grand, EC1  
Crane Ltd, 15-16 Red Lion Court, Fleet St, EC4  
Donald Bros Ltd, Roxburgh House, 287 Regent St, W1  
Egry Ltd, Warble Way, Acton, W3  
EMI Electronics Ltd, Hayes, Middlesex  
Farnbridge Furniture (1953) Ltd, 105-7 Dalston Lane, E8  
T. F. Firth & Sons Ltd, Flush Mills, Heckmondwike, Yorks  
Fothergill & Harvey Ltd, Peter St, Manchester 2  
Furniture Industries Ltd, London Rd, High Wycombe Bucks  
Hall Hardinge Ltd, Stourton House, Dacre St, sw1  
John F. Hardy, 6a Richmond Rd, New Barnet, Herts  
John Holdsworth & Co Ltd, Shaw Lodge Mills, Halifax  
ICI (Hyde) Ltd, PO Box 15, Newton Works, Hyde, Cheshire  
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Margo Fabrics Ltd, 168 Regent St, W1  
Alfred Morris Furnishings Ltd, 60 Berners St, W1  
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Thomas Webb & Sons, Dennis Glassworks, Stourbridge, Worcs  
Jas. Williamson & Son Ltd, Lancaster  
The Worcester Royal Porcelain Co Ltd, Worcester  
X-Lon Products, 48 Gillingham St, SW1

## DESIGNERS in this issue

Alan H. Adams; Ronald Armstrong; James Ashworth; Misha Black, OBE, RDI, PSIA; Stephen Bundy, MSA; Margaret Calvert; Lucian H. Ercolani; Geoffrey Gale, LSIA; Eric Gilboy, MSA; S. D. Goerner; Leslie Gooday, ARIBA, MSA; David Hammond, DESRCA; John F. Hardy; Robert Heritage, DESRCA, MSA; K. M. Hills, DESRCA; Ian Hodgson; Richard B. Hornby, MSA; Isaac Jennings; Jock Kinneir, PSIA; A. B. Kirkbride; Charles Ledger; O. F. Maclarens; H. G. A. Newman; D. M. Reeves, DESRCA; Tibor Reich, PSIA; Richard Stevens, MSA; Nigel Walters, PSIA; Sheila Walters; John W. Waterer, RDI, PSIA; Arthur S. Waterhouse, LSIA.



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Wardle, Bernard (Everflex) Ltd	cover IV

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## Record of Designers

CoID, 28 Haymarket, London SW1, or to the CoID, Scottish Committee, 46 West George Street, Glasgow C2.

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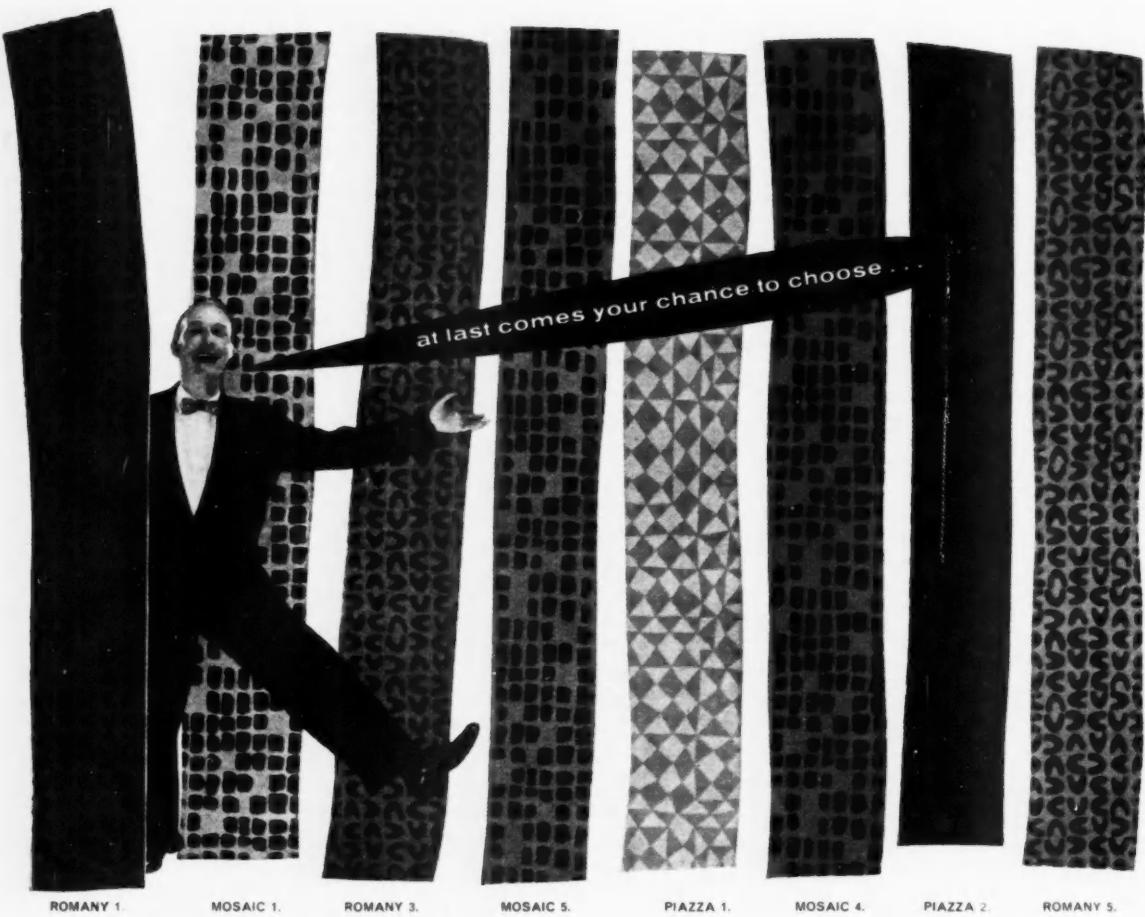
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